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Editorial Notes

Looking Ahead

WE must look to the wholesale substitution of solid fuel by gas, which is the ideal solution of domestic and industrial heating problems. The results of work being carried out on the gasification of coal under the auspices of the Joint Research Committee of The Institution of Gas Engineers and Leeds University have already made it possible to visualize a new era in the processing of coal, an era "when the handling of solid fuel will not be tolerated and the public demand will be for the ease and comfort afforded by fuel delivered by pipe and controlled by tap." The words quoted are from the Presidential Address given to the Institution yesterday by Mr. H. C. Smith. We shall have much more to say later regarding the process of gasification envisaged as the outcome of this outstanding investigation. The possibilities are fascinating and unquestionably call for a greater expenditure of effort and money on research aimed at transforming these possibilities into realities.

At present, of the £15,000 subscribed to the Special Purposes Fund of the Institution, only about £6,000 is available for research. This sum, as Mr. Smith pointed out in his Address, in no way represents the total expenditure on research in the Industry. Individual gas undertakings and the makers of gas plant and appliances each spend many times this amount on their own research work, the results of which are generally made available for the benefit of the Industry as a whole. The Gas Light and Coke Company alone spends £100,000 a year on research and investigation into the many and varied aspects of gas and coke manufacture and utilization. Not long ago it was made known that 110 members of the Society of British Gas Industries were spending over £160,000 on research. It is important that this work should continue undiminished, and that there should be still greater collaboration. On the other hand, as Mr. Smith emphasized in his Address and as we have stressed before on many occasions, the co-operative research on which approximately £6,000 was spent in 1937 should be increased to an extent more commensurate with the magnitude and importance of the Industry.

Hence the interest aroused at the Institution meeting by the President's announcement that a definite advance had been made towards this closer collaboration of all concerned in the prosecution of long range and fundamental research. For some time, he explained, the Institution Council and the Research Executive Committee had had under consideration the possibility of carrying out more work of this nature and had examined means to this end. They had, he said, tentatively explored the position as to the conditions under which financial assistance might be given to research work by the Department of Scientific and Industrial Research. As a result of the careful consideration given to the problem and of the conviction that many fundamental and long range problems exist which could with great advantage to the Industry be best examined jointly by both sides of the Industry the Council had recommended to the Council of the British Gas Federation—as representing every branch of the Industry's interests—that the Councils of the Institution and of the Society of British Gas Industries should be invited to appoint a joint committee to examine the whole question of the setting up of a Research Body with the object of conducting research on co-operative lines. That recommendation had been unanimously approved and it was anticipated that the members appointed to the joint committee would shortly meet and commence their discussions. This new move towards closer co-operation is greatly to be welcomed; and the Industry will await with keen interest the report of this joint committee.

While, as we have said, the ideal solution of the heating problem lies in the wholesale substitution of solid fuel by gas, we have to face present facts; and there is to our mind nothing inconsistent in striving for the ideal of complete gasification of coal and, in the meantime, doing everything possible to increase the market value of gas coke. At the moment we must depend on the revenue received from coke —and, of course, other by-products—to effect reductions in the selling price of gas. As things are, without the revenue from coke, gas would have to be sold at a higher price. It has been stated that sales of coke are responsible for a reduction in gas price equivalent to 2d. a therm. Mr. Smith has been very closely associated with the London and Counties Coke Association, and it is widely known that the Tottenham Company has developed a most efficient selling organization to market a coke in the preparation of which the greatest care is exercised. Many other undertakings have seriously tackled the problem of coke preparation and sale; unfortunately, as Mr. Smith remarked in his Address yesterday, there are still too many undertakings quite content to dispose of their coke in bulk without making any attempt to build up a market in their own districts. Local conditions do vary, he said, and local prejudices may be difficult to overcome, but gas undertakings cannot claim to be able to supply all the heat requirements of their consumers unless they are in a position to supply them with graded coke of suitable size and quality for domestic use. When so much can be done, it is difficult to understand the attitude of those undertakings which take little or no interest in the selling of coke. During the past 3 or 4 years, for example, in the area covered by the L.C.C.A. approximately 215,000 gas-ignited domestic coke grates have been installed, many of these in districts where

at one time the view was held that these appliances should not be encouraged as their development was likely to interfere with the use of gas fires. It has been shown that the number of gas fires so affected is small and that in such cases the consumer would not have retained a gas fire for continuous use.

Coal Quality

THE economics of gas making and the manufacture of a satisfactory solid smokeless fuel are, of course, bound up with the price and quality of the raw material, coal; and it was to be expected that Mr. Smith should refer to the coal situation in his Address. He quoted the recent remarks of the Chairman of a Colliery Company: "Now that more economic prices are being obtained for public utility and industrial fuels it is the opinion of your Board that the price of household coals to the public should be reduced in order to stimulate demand and meet the keen competition of oil, coke, gas, and electricity." More and more is it apparent that the Gas Industry must do its part in making the general public conscious of the smoke evil and the fact that it can be abolished without any added drain on the public's pocket by the substitution of coal by gas and coke. It was, however, rather from the aspect of quality of coal that Mr. Smith, as President of a technical body, dealt with the question. While admitting that it is not as easy to control the quality of coal as it is to control that of a manufactured product, he maintained quite rightly that the margin between what might be done and what is being done in the way of supplying clean coal of regular quality is too wide. Surely, he observed, it is not too much for the Gas Industry to ask that the legislation which has been granted to the coal industry should not stop at providing the machinery for raising prices but should also impose obligations under penalty to supply clean coal of prescribed and regular quality. Graphs included in the Address showed the variations in quality of the coal supplied to the Tottenham Undertaking, which for years past has paid great attention to the various coals purchased and has selected them only after both laboratory and large-scale tests.

Among other matters dealt with by Mr. Smith in his broad survey of the Industry were education and the policy of grouping. In regard to the former he referred to the removal of the ban which previously prevented candidates from taking the higher grade examinations of the Institution Education Scheme unless they were engaged on the practical side of the Industry. Now the way is open for anyone, whatever his position in the Industry, to study for and, if successful, to be awarded, the Higher Grade Certificate. He also spoke of the work of the Scheme in raising the standard of knowledge and workmanship of those whose task it is to install and maintain modern gas appliances of advanced design. We have frequently called attention to the need for a greater number of adequately trained fitters and have urged gas undertakings to provide all possible facilities for their training. On the subject of change in control of gas undertakings Mr. Smith expressed the view that amalgamation between adjoining undertakings is much to be preferred to the acquisition of those undertakings either by holding companies or by the purchase by one undertaking of another company's stock. Under present procedure, however, amalgamation is fraught with delay and expense. As example, if the Tottenham Company promotes an Order, four County Councils have the right to petition against it, and in addition seven Borough Councils and thirteen Urban District Councils. Which led Mr. Smith to the serious suggestion that amalgamation proceedings might well be made easier and more expeditious, while at the same time maintaining adequate protection of consumers' interests, if the right to petition against Draft Orders was limited to County Councils and County Boroughs.

Enterprise in Wales

DURING the last six years the annual gas sales by the Port Talbot Undertaking have increased by 43%, unaccounted-for gas has been reduced from 11% to 5%, sales of appliances have leapt from £4,000 to £18,000 a year, and gas prices have been substantially reduced. These facts—they were stated by Mr. E. M. Edwards, Engineer and Manager to the Port Talbot Gas Department, in a Paper before the Wales and Monmouthshire Association on May 19—constitute a record of which the Author may rightly feel proud and they afford an insight into the vigorous policy of development which the Department has pursued. Results such as these—and it must be remembered that Port Talbot is scheduled as a distressed area—could not have been achieved without drive and confidence and the application of modern methods to the sale of a satisfactory and uniform product. The Paper showed that technical control of gas manufacture is not the prerogative of the large undertaking. Port Talbot, selling 218 million cu.ft. of gas a year, is a comparatively small undertaking, but it sends out a dried gas of low sulphur content (at the moment 10 grains per 100 cu.ft.; it is hoped to reduce this content further) and of low and strictly controlled oxygen content. Benzole recovery to the extent of 2 gallons per ton is practised; and to the gas drying plant, installed three years ago, Mr. Edwards attributes a "startling reduction" in meter repair costs and in charges for the repairs of mains and services. Losses due to the faulty registration of meters have been corrected by systematic check, and a thorough search for leakage from mains and services is being carried out throughout every road in the Department's area.

Control of manufacture and care in distribution of a dependable product, then, form the basis of the sales development scheme put into force at Port Talbot, a scheme necessarily designed to meet the requirements of low wage earners and to counter the incidence of cheap coal. The first step was to offer consumers facilities for the easy acquisition of modern gas appliances, a weekly payment system being introduced. This long-period hire purchase plan met with ready response, as is indicated by the figures of appliance sales which we have already quoted from Mr. Edwards' Paper. It is being increasingly brought home, however, that sales of appliances cannot in themselves be regarded as a criterion of progress; this must be measured by the use to which they are put, by the amount of gas consumed through their installation. Appliances should be sold with an eye not on their immediate sale but on their ultimate use, and a position can be reached when the charges which have to be made for equipment so restrict the consumer's purchasing power as actually to reduce the amount spent on gas. Care has to be exercised to avoid over-selling of appliances while at the same time meeting the hire and hire-purchase terms of electrical undertakings and other competing fuel interests.

It follows, then, that facilities for the acquisition of gas appliances must be coupled with attractive rates for gas if these appliances are to be used to full advantage and new loads built up. Development of the gas business will depend —this is not the first time we have said this—on offering gas

for additional use at such prices as will enable the consumer to substitute solid fuel by gas without incurring an all-in fuel bill greater than formerly or, if it does exceed that sum, of an amount which the consumer is willing and able to pay for the added convenience and labour saving of gaseous fuel. That Mr. Edwards is alive to the need for promotional rates is shown by his adoption of an optional two-part tariff at Port Talbot; and he gave a most interesting analysis of consumptions of both ordinary and prepayment consumers before and after the operation of the tariff. The figures relate to a twelve-month period prior to the introduction of the tariff and to a similar period after its introduction. On a flat rate basis, the average annual consumption of 99 ordinary consumers was 42,500 cu.ft. and the average revenue £8 3s. 6d. With the two-part tariff the average consumption was again 42,500 cu.ft. and the average revenue £6 11s. 9d. "The de-detailed analyses of the individual consumer's accounts," he said, "show that in some instances very substantial percentage increases are recorded, but the total increase is not, on the face of it, encouraging." The work, however, is in its initial stage, and much remains to be done to obtain the required results. The possibilities are indicated by an increase of 15% in the consumption of prepayment consumers who have adopted the two-part tariff. Education of consumers to the advantages of gas will, with a low commodity charge, lead to increased consumption; and only by means of suitable competitive tariffs will progress be made in the displacement of solid fuel by gas. The public has been so long accustomed to the flat rate charge for gas that it cannot yet appreciate how much service can be had for little money with gas sold on a two-part or other attractive tariff. That knowledge will come, however, as a result of sales effort. Nor should this effort be confined to heat service. In this regard we would call particular attention to the good work done at Port Talbot in the field of domestic lighting. Over 3,100 lighting burners were sold by the Gas Undertaking last year.

Attractive Tariffs

INCREASE in consumption per consumer can only be brought about by making the price of gas attractive and competitive not only with electricity but with solid fuels, in substituting which there lies an enormous field of development. This important question of rational gas pricing was dealt with in a most interesting way by Mr. Charles Bateman, Engineer and General Manager to the Harrogate Gas Company, in his recent Paper on "Present Day Problems" to the North of England Gas Managers' Association. The commodity charge, he said, must be arrived at by a knowledge of competitive solid fuel prices and be judged by local conditions. In regard to his own area of supply he has in mind a commodity price of not more than 4½d. a therm. "Half-price gas" in the area would mean 4·05d. per therm.

The Author put forward his proposals for an attractive system of gas charging, which would be a combination of standing charge, low commodity charge, and block system. As a result of analysis of the accounts of ordinary consumers in his area he has found that consumption varies directly with the rateable value, and that if the first block is based on rateable value, then it becomes possible to offer the consumer all excess consumption at half price. In effect, Mr. Bateman is concealing the standing charge in the block, but his system has the obvious merit that it would not be necessary to demand the service charge in advance, which demand does not, of course, help in putting a two-part tariff across. Many will not agree with the idea of basing the standing charge on the rateable value of a house and will contend that assessment according to the number of rooms is a better plan. The point was raised at the North of England meeting that rateable value is subject to variation outside any control of a gas manager. We see nothing of a stumbling block in this, however. Once the assessment of standing charge has been arrived at there appears to us no reason why it should be altered with fluctuations in local rates. Irrespective of the basis of assessment, however, Mr. Bateman's scheme has the attraction that it would not involve ordinary consumers in payment in advance of a service charge.

Mr. Bateman would deal with his prepayment consumers in a different way. His proposal is to take all prepayment consumers in a block—to take the average consumption per prepayment consumer figure and to charge this block at normal rates, any excess being at half-price. In his own Company the average consumption is 3,300 cu.ft. a quarter. His idea would be to reset all prepayment meters so that consumers would receive double the amount of gas per coin compared with the amount previously received. Then the consumer would be asked to prepay, on a weekly basis, the difference between the old and the new price on the 3,300 cu.ft. We cannot discern in this system anything different from an ordinary two-part tariff. Nor can we see anything in Mr. Bateman's scheme for ordinary consumers which is fundamentally different from other schemes which have been operated for some years. Take the Newcastle block system, for example. Here also the standing charge is concealed in the first block, the assessment of the block being based on the number of rooms in a house instead of on rateable value. The Newcastle scheme also caters for seasonal demand, the first and second blocks being reduced in the summer quarters still further to stimulate gas usage. We are not, however, much concerned about the relative merits of assessment on rateable value or on number of rooms. What we do insist is that the flat rate is a barrier to progress and that this barrier must be removed. Mr. Bateman expressed our views in regard to this principle.

West Yorkshire Gas Distribution Bill

THE main features of this important Bill were discussed in last week's "JOURNAL." The concluding day of the hearing by the House of Lords Committee was largely occupied in a discussion which is of interest to the whole Industry. The East and West Riding County Councils petitioned for a Highway Protective Clause which the promoters of the Bill had refused to accept, and it is satisfactory that this Clause was rejected by the Committee. The Committee therefore upheld the decision of the Lords Committee which considered the Northampton Gas Special Order in 1925 and which, under the Chairmanship of the Marquis of Bath, refused to impose upon the Gas Company an onerous protective clause in favour of the Northamptonshire County Council.

In the present case the County Councils of the East and West Riding contended that the protection given to them as Highway Authorities by the Gas-Works Clauses Acts was inadequate and unsuited to modern highway conditions. In particular they demanded that special conditions should be

applied to the laying of the 24-in. main necessary for the proposed gas grid, which would pass through many local authority areas without giving direct benefit to the inhabitants of those areas. The County Councils therefore demanded special powers with regard to prescribing the route to be followed by the main and contended that in certain cases they should be entitled to require that the main should be laid in private land. On the other side, Counsel for the promoters contended that the Northampton case had established that the highway clauses of the Gas-Works Clauses Act afforded to highway authorities every protection which they were reasonably entitled to demand.

It is particularly interesting to note that representatives of both the Ministry of Transport and the Gas Administration of the Board of Trade were called as witnesses. The Ministry of Transport are now directly interested in these matters as they are the Highway Authority of all the trunk roads throughout the country, and their representative explained that the Ministry would require that any protection conceded to the County Councils should be made applicable to them as the Authority for Trunk Roads. The trunk roads of the country have only recently been transferred to the Ministry, and it is clear that no definite policy has yet been adopted by the Ministry in regard to this matter. The Director of Gas Administration, on behalf of the Board of Trade, explained that the practice of the Board was "not to insert any extra clauses unless they be agreed between the parties."

As we have said, the application for the clauses was withdrawn by the County Councils. In our view the complicated matter of the rights of highway authorities with regard to sub-surface apparatus is one which would be more satisfactorily settled by negotiations between the parties than by application to Parliament. It is to be hoped that the decision of the House of Lords will render the highway authorities more anxious than before to implement such negotiations.

Personal

His many friends in the Gas Industry will be very sorry to hear that Mr. P. S. WILKINS, Managing Director of the Godalming Gas and Coke Company, has tendered his resignation to the Board on the grounds of ill-health.

The Directors accepted Mr. Wilkins' resignation with the greatest regret, and in doing so placed on record their great appreciation of his loyal and valuable services, rendered to the Company since 1909, when he joined the Staff. It will be the sincere wish of all who knew him that the release from all responsibility will enable Mr. Wilkins to make a complete recovery and be spared to enjoy many years of retirement.

The Directors have appointed Mr. F. A. GREENE, M.I.M.E., M.I.E.E., M.I.Chem.E., as Managing Director pending the appointment of a General Manager in succession to Mr. Wilkins.

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The Mayor of Exeter, Mr. R. J. REW, who is well known to the Industry as Managing Director of the Devon Gas Association, had two important functions to fulfil recently.

On May 17, at an impressive ceremony, he had the pleasure of handing over to a special Guard of Honour of the King's Own Royal (Lancaster) Regiment the colours of the Regiment which had occupied an honoured place in the Exeter Guildhall since 1865. On May 19, Her Majesty Queen Mary concluded her tour of Devon with a visit to Exeter. After visiting the Cathedral and the University College of the South-West, Her Majesty was received at the Guildhall by the Mayor, walking with his Worship into the Main Hall. Here the Queen had presented to her by the Mayor, the Mayoress, Mrs. R. J. Rew, his daughter, Miss D. Rew, and his daughter-in-law, Mrs. R. F. Rew. A charming ceremony followed, when little Miss Isabel Rew, granddaughter of the Mayor and Mayoress, stepped forward and handed to Her Majesty a beautiful bouquet. This ceremony over, presentations of Civic dignitaries followed. The Town Clerk gave Her Majesty a short account of the history and features of the Guildhall, after which tea was served. Queen Mary, at the conclusion of this memorable visit to Exeter, informed the Mayor she had had a "marvellous reception" in the City. As a memento of this visit, the Mayor has received a signed portrait of Her Majesty.

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Mrs. W. H. LOCKE wishes to thank Mr. W. H. Locke's many friends in the Gas Industry for their kind messages of sympathy to her through General Gas Appliances, Ltd.

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At the Connaught Rooms on Thursday last, a farewell dinner was given by the Officers and Senior Officials of the Tottenham and District Gas Company to Mr. J. A. WILLIAMS, on his retirement from the office of Assistant Secretary after 37 years' service with the Company. The Chair was occupied by Mr. E. J. K. Fussell, the Secretary of the Company, supported by Mr. H. C. Smith, the Chief Engineer. Mr. Fussell very ably proposed the Toast of Mr. Williams, and presented him with a handsome silver cigarette casket, while Mrs. Williams, who was also present, was presented with a gold wrist watch.

Mr. Williams joined the Company in October, 1901, and was appointed Assistant Secretary by the late Sir Corbet Woodall in April, 1916.

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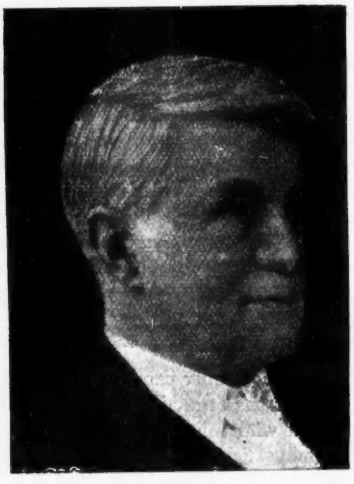
The Rt. Hon. Lord HYNDLEY has been elected Chairman of Stephenson Clarke and Associated Companies, Ltd., in succession to Sir Stephenson H. Kent, K.C.B., who retired recently.

Obituary

Dr. J. W. Mellor.

It is with deep regret that we announce the death of Dr. J. W. Mellor, C.B.E., D.Sc., F.R.S., who was Director of Research to the British Refractories Research Association from the formation of the Association in 1920 until his retirement on March 31, 1937. It was his express wish that his friends should not be informed of his death until after the cremation service, which took place privately on Friday at Golders Green.



Joseph William Mellor was born on July 9, 1869, at Huddersfield, but was taken, when very young, to New Zealand, where he was educated. He graduated with 1st Class Honours in Chemistry at New Zealand University. Awarded an 1851 Exhibition Scholarship, he came to England at the beginning of the present century to work under Professor H. B. Dixon at Manchester University. His most important work there was a comprehensive investigation of the reaction between hydrogen and chlorine.

Leaving Manchester, he obtained a post as Chemistry master at the Newcastle-under-Lyme High School. Here in North Staffordshire he developed an interest in the local ceramic industry. In 1905, he was appointed by the Staffordshire Education Committee to organize the teaching of ceramics in the Pottery District. The classes were first conducted at Tunstall, later at Stoke-on-Trent in temporary premises, and eventually in 1914 in the newly-built North Staffordshire Technical College, Dr. Mellor becoming Principal of the Pottery Department. On his retirement from this position in 1934, the Ceramic Department of the College had won an international reputation.

Coincident with Dr. Mellor's association with the teaching of ceramics was his association with the Ceramic Society, of which he was made Hon. Secretary in 1905. Under his guidance the Society has grown from a local group of interested members to a national technological and scientific society concerned with the study of clay and refractory products of all types, and having members drawn from all parts of the country and abroad.

Despite Dr. Mellor's main preoccupation with teaching and research in ceramic subjects since 1905, his interest in pure chemistry was maintained unabated. His numerous books bear testimony to this. There was his "Chemical Statics and Dyna-

mics" (a standard text-book for University students) and his "Modern Inorganic Chemistry" in 1912 (a standard text-book for schools which was so popular that many editions have now appeared). In 1922 the first two volumes of his great work, "A Comprehensive Treatise on Inorganic and Theoretical Chemistry," in sixteen volumes, were published. This work might well be claimed as the standard reference book on Inorganic Chemistry all over the world. The prestige it won for him, coupled with his achievements in ceramic research, were recognized when he was made a Fellow of the Royal Society in 1927.

Dr. Mellor's Association with the Gas Industry dated from about 1908. At this time data on the properties of fireclay and refractory materials generally were very scanty. With the support of the Gas Industry he set to work at once to remedy the more serious deficiencies. His work on the texture of refractories and the refractoriness and refractoriness-under-load tests, for example, was of vital importance to the refractories industry. He was a pioneer also on measurements of the specific heat of fireclay and silica bricks. These Papers were the early steps in the way of standardization and the formulation of specifications which have reacted so well on the Gas Industry and other industries using refractories.

The development of the work on refractories (largely fostered by The Institution of Gas Engineers) led in 1920, with the support of the Department of Scientific and Industrial Research, to the formation of the British Refractories Research Association with Dr. Mellor as its Director of Research. Until 1934 the work was carried out in temporary buildings in the grounds of the North Staffordshire Technical College, but the Association then moved to its own premises, which were named "The Mellor Laboratories" in recognition of the work done by its first Director. Dr. Mellor retired from the Directorship in April, 1937, and was appointed its first President.

Dr. Mellor represented the New Zealand Government on the Board of Governors of the Imperial College, South Kensington.

When he retired from the position of Director of Research to the B.R.R.A. owing to ill-health in 1937, the Association presented him with a cheque for £1,500 and a gift of books in recognition of his work for the ceramic industry in general and the refractories branch in particular. His services to science earned him the award of C.B.E. in the Coronation Honours.

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We regret to announce the death of Mr. L. A. RUMBLE, Chief Assistant to the Engineer and Manager of the Reading Gas Company, on May 26. Previous to his appointment with the Reading Company in 1905, he was for 14 years with Messrs. C. & W. Walker, Ltd.

"GAS JOURNAL" Directory

In order that readers may be able to keep the particulars contained in the "JOURNAL" Directory up to date, we summarize in the following list various changes which have occurred during the past month:

Page 6. BARNSTAPLE. J. H. Lowther appointed M.D.; W. F. Dibble appointed S.
" 6. BIDEFORD. J. H. Lowther, D., G.M., & S.
" 20. DARTMOUTH. W. J. Friendship, S., deceased.
" 28. GODALMING. P. S. Wilkins, M.D., retired.
" 64. STOCKTON. F. L. Scaife appointed E. & M.
" 66. SUTTON BRIDGE. W. A. Dicker, M., deceased.
" 80. BUCKIE. W. C. Campbell resigned.
" 82. DALKEITH. W. M. Henderson appointed M. vice R. Hamilton retired.
" 84. GALASHIELS. W. C. Campbell appointed E. & M.
" 88. LESLIE. G. Myles appointed S. vice G. Wilkie, deceased.
" 92. WEST WEMYSS. W. Gilchrist appointed M.

Forthcoming Engagements

June

15.—Manchester and District Juniors.—Visit to Thorncliffe Works of Newton Chambers & Co., Ltd.
16.—S.B.G.I.—Council Meeting, 11.15 a.m.
17.—I.G.E.—Refractory Materials Joint Committee, Mellor Laboratories, Shelton, Stoke-on-Trent, 2.30 p.m. (*Altered from June* 16.)
18.—Western Juniors.—Summer Meeting at Dartmouth.
23.—B.G.F.—Visit to Empire Exhibition, Glasgow.
24.—Southern Association.—Summer Meeting at Lea Bridge.
25.—London and Southern Juniors.—Summer Visit to Folkestone.
30.—Southern Association (Eastern District).—County Meeting at Croydon.

[*No meeting of the Central Executive Board of the National Gas Council will be held in June.*]

July.

22.—I.G.E.—Joint Research Committee, 2.30 p.m. (*Transferred from June* 24.)
24.—I.G.E.—Liquor Effluents and Ammonia Committee, 11.15 a.m. (*Transferred from June* 24.)

SEEN AT THE EASTERN COUNTIES MEETING

Left to Right: P. J. Lucas, R. G. Shadbolt, G. C. D. Phillips, J. H. Troughton, F. H. Robinson, and A. Gregory.

AT

BOSTON

on

MAY

19 and 20

under the

Presidency

of

Mr. W. C.

CHAPMAN.

P. J. Lucas, W. C. Chapman (the President), G. Wright, and Dr. P. C. L. Thorne (representing Education)

News of the Week

The "Nutrition" Film had its Glasgow *première* in the Grand Central Cinema on May 29. The film was shown under the auspices of the People's Film Association.

To the Eire Financial Agreement Loan of £10,000,000 the Alliance and Dublin Consumers' Gas Company subscribed £20,000 and the Cork Gas Consumers' Company £5,000.

A Reduction is to be made by the Darlington Town Council in the price of gas for the villages of Whessoe, Croft, Hurworth, Middleton, Sadberge, Aycliffe, and Heighington.

A Special Order is to be promoted by the Darlington Town Council to authorize the supplying of gas to Bishopton East, West Newbiggin, Little Hampton, Great Stainton, and other areas.

Sanction to Borrow £5,000 for laying high-pressure gas mains from Yarm Road to Grange Road and along Coniscliffe Road to the Merrybent Railway and £10,000 for buying gas meters, cookers, stoves, &c., is sought by the Darlington Town Council.

Over 10,000 Selected Consumers in the area of the Newcastle-upon-Tyne and Gateshead Gas Company have received copies of an attractive sales letter dealing with the merits of gas water heating. A point is made of the economy to be effected by the consumer with the Company's "Excess" gas rate.

A Demonstration Hall for gas cookery seating 150 is to be included in an exhibition which will be held during September at Gillingham. The exhibition, which is stated to be the largest ever held in Kent, is to be organized by the Gillingham Corporation with the co-operation of the County Council and other local authorities.

The First Official "Gas Committee" Visit to the British Gas Federation Exhibits at the Empire Exhibition took place on May 23, when Provost Gray, of Airdrie, headed a deputation of the Gas Committee and Corporation officials. Mr. W. R. Drummond accompanied them on their tour of the Gas Exhibits which lasted throughout the afternoon. An informal meal proved a pleasant conclusion to the visit when in a short speech of welcome Mr. Drummond said how glad he was to have had the opportunity of conducting them on their tour of the various exhibits. In reply, Provost Gray thanked Mr. Drummond for his hospitality. Mr. A. Kellock, Engineer and Manager of the Airdrie Gas Department, also spoke.

The Annual Meeting of the Irish Association of Gas Managers will be held in Dublin on August 9, 10, and 11.

The Closing-Down of the coke-oven plants at Redcar Iron and Steel Works has been decided on by Dorman Long & Co., Ltd. Redcar town will be supplied with gas from the new coke oven plant at the Cleveland Works.

A Tour of Inspection of the Arbroath Corporation Gas-Works was made on May 24 by officials and members of Arbroath Women Citizens' Association, the visitors being conducted on their tour by Mr. D. Morton, Gas Manager, and Mr. C. Dalton, Works Superintendent. Mr. A. M'Crae Wilson, Convener of the Gas Committee, was also present.

A Visit was Paid by members of the Glasgow Corporation Gas Committee and Officials of the Gas Department to the Empire Exhibition on May 25. The party, which was led by Councillor Wilson, Convener of the Gas Committee, inspected the Industrial Exhibit in the Palace of Engineering and the Gas Pavilion. Mr. J. W. McLusky, General Manager, was unfortunately unable to attend owing to indisposition. The party was entertained at tea by the Working Committee. Mr. David Fulton, Chairman, in welcoming them, paid tribute to the splendid efforts of the Gas Department in connexion with the Industrial Exhibit and the Gas Pavilion. Without that help, he said, the task would have been impossible. Councillor Wilson replied.

In his Installation Speech, the Mayor of Bangor (Co. Down), Alderman Dr. R. M. Bowman, said it was fitting that he should allude to the pamphlet entitled "The Cause of Cancer," recently issued to the people of Bangor. [Reference was made to the pamphlet in our last week's issue.] They would have seen from the reply to a question in the Northern Parliament that this production emanated from the Electricity Board of Northern Ireland, although its contents had been discredited by the highest authorities on cancer. No one could have any objection to healthy competition, but he strongly deprecated this method of advertising. It was certainly a poor reward for the generous manner in which Bangor had handed over its electricity undertaking to the Board without looking for profit of any kind. As a medical man, he took that opportunity of reassuring the people of Bangor that the theory propounded in this publication was completely refuted by the highest authorities on cancer, and that they could continue to use the excellent gas produced by the ratepayers' own undertaking with perfect safety.

Gas at the Ipswich Municipal and Suffolk Industries Exhibition

The Ipswich Municipal and Suffolk Industries Exhibition was held at Ipswich from May 3 to 14. It was on a large scale, the stands numbering over 300 and including exhibits by 21 Corporation Departments. The number of visitors was 136,000.

The Ipswich Gas Light Company were represented by a large stand 48 ft. by 20 ft., by a Lecture Hall 30 ft. by 20 ft., and by a smaller stand. Messrs. Ascot Gas Water Heaters, Ltd., W. H. Dean & Son, Ltd., R. & A. Main, Ltd., the Parkinson Stove Company, and Radiation Ltd., collaborated with the Ipswich Gas Light Company in making an impressive and comprehensive exhibit. As may be seen from the photograph, the large stand was left as open as possible.

In connexion with the Exhibition a special offer of 5% discount off all gas appliances bought for cash or on hire purchase was made; a competition was organized in which competitors were invited to place in order of merit ten advantages of gas for cooking, and a large number of entries was received.

In the Lecture Hall (advertised as "Mr. Therm's Theatre") a programme was shown at frequent intervals, consisting of a brief Cookery Demonstration by Miss Hawkins, following which one of the Gas Films was shown. "Mr. Therm" biscuits were handed round, while a 3 or 4 minute talk on gas appliances and terms was given, the programme ending with a free draw for "Mr. Therm" pastry cutters and ash trays. This show proved very popular with the public, more than 4,000 people seeing the programme. The maximum capacity of the hall was about 100, so it is obvious that "full houses" were the rule.

The business results were excellent. Sales included more than 100 cookers, a large number of water heaters, about 15 washing machines, and a number of fires and refrigerators. In addition many useful contacts were made and enquiries from builders and architects were received for all kinds of appliances. The Gas Exhibit, in fact, proved one of the most popular in the Exhibition.

Croydon Co-Partners' Meeting

The Annual Meeting of Co-Partners in the Croydon Gas Company is fast outgrowing the accommodation provided by the North End Hall, Croydon, which was filled to capacity on May 24 when more than two thousand co-partners and their wives assembled for this ever-popular yearly event.

The gathering is primarily intended for the entertainment of the co-partners, and an excellent variety programme is always the order of the day; it is customary, however, for the Chairman of the Company, Mr. William Cash, supported by other Directors and Senior Officers of the Company, to take the platform for a short while in order to acquaint co-partners with the progress of the scheme during the year and to present long-service certificates. Mr. Cash sees to it that the "business" session never outruns the time allotted to it, and he succeeded in completing that part of the programme at last week's meeting in ten minutes under schedule.

After Mr. O. ARNOLD (Chairman of the Co-Partners' Representatives on the Co-Partnership and Works Joint Committee) had presented his report, Mr. CASH referred briefly to the Report for the year, which showed that the bonus had been maintained at the rate of 7%, this being the rate of dividend on the sliding-scale stock of the Company for the year ended Dec. 31, 1937. The bonus amounted to £15,070 4s. 5d.—an increase of £997 17s. 9d. on the previous year. Mr. Cash offered a cordial welcome to all present and asked them all to bear in mind the basis of their association together through this co-partnership scheme. Any employee who believed he had a grievance or had any point he wished to be discussed was invited to bring the matter before the Committee where it would have every attention and consideration. He paid tribute to all that Mr. R. Richardson had done for the scheme. He was for 15 years Secretary to the Co-Partners' Representatives and was one of the Co-Partnership Trustees from January, 1926, up to the date of his retirement last February—after serving the Company for 21 years. The number of co-partners was the highest they had ever reached, while the Pension Fund had touched the half million mark. The Company's contribution to this Fund had been increased from £10,000 to £15,000 because they wanted to clear up the actuarial position at the earliest possible date.

Last July, went on the Chairman, they had entertained 70 pensioners at tea on the sports ground, and it proved so enjoyable that they hoped to make this an annual event. They had also completed the ten houses and twelve flats for employees in Rigby Close—so named after their old friend Mr. Rigby. In October they had installed at the works a crude benzole plant of a capacity of 1,000 gallons per day, while the works offices had been rebuilt to a specification prepared by their Engineer; this provided much better facilities for the works staff. Work was shortly to commence on the new showrooms in Addington Road, Selsdon, while ground had also been purchased for a similar purpose at Coulsdon. The plans for the new Chief Offices in Katharine Street were now in hand, and it was hoped that work would be started during the present year. The new building would provide greatly improved accommodation as well as up-to-date showrooms. Finally, Mr. Cash referred briefly to the general progress of the Company during the year on the lines of his remarks to the stockholders at the Annual General Meeting of the Company, concluding with an expression of thanks to all co-partners for the work they had done, and an appeal for a continuance of that good work for the public and the stockholders.

Mr. WILLIAM CASH, Jnr., made a short speech which was much appreciated by those present. He spoke of the security which, in these troublous times—when in other European countries a knock on the door might mean the firing squad—the Company gave them in their work and afterwards, through the Pension Fund, in their old age. This was something worth supporting and worth working for with every ounce of their strength, whether of mind or body. In conclusion, he congratulated their General Manager (Mr. W. J. Sandeman) on his appointment as Executive Chairman of the British Commercial Gas Association.

A presentation of a gold watch was made by the Chairman to Mr. P. B. Dodd on his retirement from the Secretaryship of the Sports Club after 18 years. Mr. Cash spoke in eulogistic terms of his work for the Club and reminded them that Mr. Dodd was himself, in his younger days, an athlete of no mean repute. In acknowledgment, Mr. Dodd paid tribute to the assistance he had received from his colleagues, and especially Mr. P. Richbell.

Long-Service Certificates.

Long-Service Certificates were then presented to the following by the Chairman, who had a word of thanks to say to each recipient for his service to the Company. He had a special word for Mr. W. A. Bishop (Sales and Service Superintendent), remarking that they were very much indebted to him for the work he had done—work which was of the utmost importance to the Industry at the present time. Each recipient has completed 25 years with the Company: M. Arnold (Clerk, Sales Department), W. A. Bishop (Sales and Service Superintendent), H. J. Bridger (Showroom Assistant, Katharine Street), H. Fitkin (Clerk, Sales Department), H. V. Frenchum (District Foreman, Sales Department), S. H. Gammon (Clerk, Sales Department), F. C. Hermon (Inspector, Purley), G. E. Kensett (Storekeeper, Katharine Street), A. G. Peters (District Foreman, Sales Department), H J. Taylor (Inspector, Caterham), J. Barlow (Assistant Foreman, William Cash Workshops), J. R. Cook (Prepayment Collector), F. B. Sheppard (Clerk, Rental Department), W. C. Young (Prepayment Collector), H. A. Agate (Fitter, Purley), C. Ayton (Fitter, Caterham), A. W. Beattie (Foreman Carpenter, Works), F. C. Brown (Fitter, Katharine Street), J. Christie (Stoker, Works), G. F. Dicker (Fitter, Purley), D. Donovan (House Examiner, Purley), A. E. Goss (Lorry Driver, Works), H. Griffiths (Fitter, Katharine Street), G. F. Parris (Canteen Steward, Works), W. H. Smith (Lamp Attendant), S. E. Stagg (Machine Hand, Works), and F. J. Wilkins (Fitter, Katharine Street).

A cordial vote of thanks, accompanied by three hearty cheers, was accorded to Mr. Cash on the proposition of Mr. W. J. SANDEMAN, who spoke of their Chairman's own long service to the Company; he had been a Director for 39 years and Chairman for the last fifteen. During the latter period Mr. Sandeman had worked in close personal touch with him and he could say with all sincerity that Mr. Cash had their interests always at heart. Mr. Sandeman also wished to thank all the co-partners for what they had done during the past year, and he appealed for their continued help in the present year, which was going to witness increases in the cost of all raw materials. They could all help tremendously by saving in many little ways both time and material. By so doing they could do much to prevent an increase in the price of gas—which so far they had avoided.

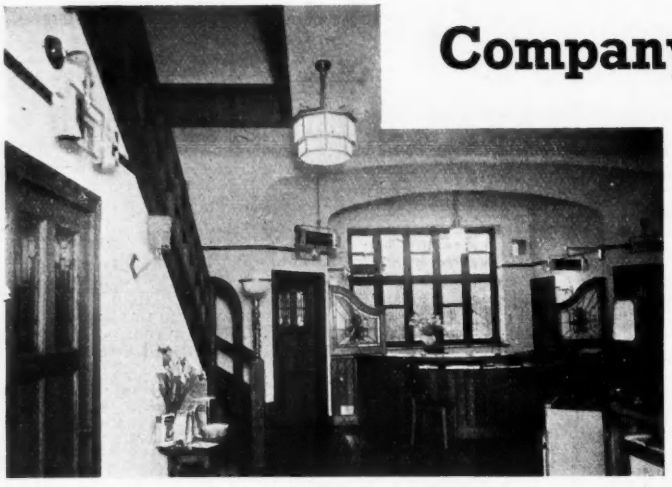
Mr. CASH thanked them for the kind way in which they had accepted Mr. Sandeman's remarks and said that of all the work he did in various directions none interested him more than what he did on behalf of the Croydon Gas Company, which was due to the spirit which pervaded the whole of their work. The way they all supported him was most gratifying to him and his colleagues, and was really encouraging.

Refreshments were subsequently provided for all present, and the remainder of the evening was given over to entertainment.

Gas Department Wins Prize in Birmingham Horse Parade

A challenge cup for the best advertising lorry entered in the Birmingham Horse Parade, held last month, was won by the above entry from the Birmingham Gas Department. The central feature of the display was a clock tower—reproduction of Birmingham's "Big Ben" on the Council House. Opposite this was an instantaneous gas water heater, bearing a striking resemblance in outline to the clock tower. The clocks in the tower and water heater were synchronized.

Haywards Heath Company Open Fine New Showrooms



The Counter and Staircase at Rear of Ground Floor.

The new showrooms of the Haywards Heath District Gas Company, which were officially opened on May 24, are among the most attractive we have yet seen in a country town, and are not only a credit to the Company, but are thoroughly in keeping with the pleasant district whose consumers they are designed to serve

In the new premises in the Broadway, Haywards Heath, every effort has been made to steer clear of the stereotyped, and in this our own inspection of the building proved that those responsible have been successful. Apart from a range of enamelled cookers down the centre of the showroom there is a refreshing absence of those serried rows of appliances along the walls which detract from the appearance of even the most modern and lavishly conceived showroom.

To take the outside first, this is of a pleasantly formal design, with two large windows flanking the main doorway, on the threshold of which is the Company's "Symbol of Service" in coloured stonework. The windows are framed in bronze, in which metal the name of the Company is executed above the windows. Above this again is a narrow balcony running the whole width of the building, and this conceals the gas flood-lamps which effectively illuminate the upper face of the building at night. The whole is surmounted by a miniature steeple on the top of which is a Mr. Therm weathercock in gilt. It should, perhaps, be mentioned that the building was originally a cinema, but only the foundations and outside walls are incorporated in the new showrooms, and we understand it now bears little resemblance to the original, so excellently have the architect and builders carried out their none too easy task.

Before entering the showroom we paused to glance through the windows at the interior. The windows are of the "open" variety, and one is immediately struck by the very pleasing view within. Particularly attractive is the arrangement of five fireplace settings, complete with appropriate designs of gas fires, just inside, these ranging from a simple tiled setting, to beautiful carved stone surrounds and mantles and composite suites which include cupboards and bookshelves. All these fireplaces can be exactly reproduced in consumers' homes if desired. Completing the homely impression imparted by these fireplaces are a few attractive ornaments, occasional tables, and gas standard lamps. The latter are connected up by means of flush fitting floor cocks beneath stainless steel plates. All that is necessary is to remove a little metal disc about the size of a half-penny and plug in the bayonet fitting from the lamp. These flush-fitting plug points are a feature of the showroom, a large number being provided in suitable positions in both floor and walls.

Beyond the fireplace suites we have a model kitchen and bathroom on opposite sides of the showroom. In the latter there is again a departure from the stereotyped. Instead of a row of gas heaters delivering into a common waste trough we have a bathroom, complete in every detail, with built-in panel gas fire, towel rail, shaving mirror, bowl heater, bijou gas light, hand basin, shower, and curtains. Indeed, the only difference in appearance from a real bathroom lies in the variety of gas water heaters over and around the bath and hand basin. All, of course, are connected up, and if a consumer doubts the capacity of any particular heater to meet her requirements it is only necessary to put the plug in the bath, turn on the appropriate tap, and prove how quickly the bath will fill and how hot the water is when it is full. The shower is served by a gas boiler to which we will refer later.

Similarly, on the other side, the kitchen shows alternative water heaters—multi-point and storage—these two appliances also serve the demonstration theatre kitchen upstairs. Typical wash-boiler and cooker are shown, together with a composite sink fitting with gas refrigerator built in beneath the draining board. Even the cold tap above the wash-boiler is "live."

Beyond the bathroom is a further demonstration of water heating by three alternative methods, all working on a storage cylinder in a cupboard, and supplying three radiators, two of which are upstairs in the demonstration room, a towel rail, and hot pipes to assist the drying of plates in a plate-rack. The first method is an enamelled gas boiler; then there is the gas circulator which can be so simply coupled up to the flow and return pipes; and, finally, a "C.C." coke-cum-gas grate fitted with a back-boiler. Adjacent is a glass cabinet for globes, &c., and a marble-topped bench where portable appliances can be demonstrated—a series of plug-in points being provided in the wall for this purpose.

A novel method of displaying gas fires is shown on the other side of the showroom. A series of about a dozen tiled surrounds have been fitted up in tiers in a corner, embracing a range of all the more usual colour schemes. In front of these settings are independent gas fires in finishes most appropriate to the colour of the setting. In the event of failure to obtain an exact colour required a complete set of colour finishes available for gas fires is displayed.

Other sections of the ground-floor showroom are devoted to a display of residuals on the one side and of refrigerators on the other. At the far end is a semi-circular counter for payment of accounts, &c., adjoining which is a small ante-room for private interviews. Very attractive oak panelling is used throughout the showroom, together with a beautifully laid floor. The walls are

The First-Floor Lounge.

finished in fan relief plastering, which is most pleasing, while large windows ensure plenty of natural light. The artificial illumination is particularly noteworthy. Strip lamps concealed above the inside of the windows floodlight the displays immediately inside. The main lighting of the interior is by Sugg's pendant fit-

tings and Falk, Stadelmann wall brackets. All lights can be turned on instantaneously. The larger fittings are either individually controlled by push-button switches or all together by means of a master switch.

The Demonstration Room.

A wide sweeping staircase at the rear of the ground-floor showroom leads to a roomy "circulating area" or lounge, out of which open the offices of the Managing Director and his Secretary, and also to the demonstration theatre which occupies the whole of the front area of the building. The latter is furnished with nesting chairs and can comfortably accommodate about a hundred persons. Gas fires and the two radiators look after the heating. The stage is fully equipped with the usual apparatus, and adjoining this is a small kitchen where afternoon tea is prepared for the audience attending the demonstrations. The original fire-escape from the old building serves this room in case of emergency.

The "circulating area," which can also be used as a waiting room for those desiring to interview the management, is in itself another showroom for gas lighting—a wide variety of attractive fittings being connected up to switch control. The two offices are exceedingly pleasingly furnished, with Bratt Colbran fires and luminous radiators. The Managing Director's room is fully panelled, with reproductions of Old Masters set in several of the smaller panels above the gas fire. The fire stands on a marble hearth and has a shelf immediately above it at window-sill level running the whole width of that wall. The view from the window is quite charming and provides an extensive vista across the railway cutting to the trees on the opposite side.

The showrooms are heated throughout, save for the three radiators already mentioned, by independent luminous gas radiators and such gas fires as may be brought into use. A point which we noticed particularly about the showrooms was the extensive use of gas signs, all push-button controlled. Indeed, every section of the showroom and the various rooms upstairs is "signposted" in this effective manner. A roomy basement is available for a stores, approached from a separate entrance alongside the building, while here also is the strong room.

We would heartily congratulate the Haywards Heath Company on the acquisition of so charming a service centre, which should do much to stimulate further interest in gas in the neighbourhood Perhaps we can also hold the new showrooms up as another example of the advantages that can accrue from control by a progressive holding company.

THE OPENING CEREMONY.

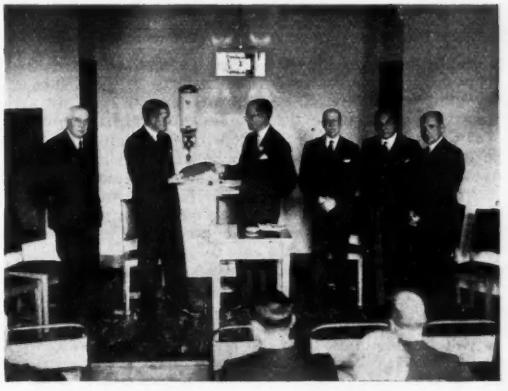
The new premises were officially opened by Sir Reginald Blaker, Bart., M.P., who was introduced by Mr. W. H. Bennett (Chairman of the Company). Mr. BENNETT recalled the installation of vertical retorts at their works a short time ago to cope with any demands of the district and said they were then conscious that their showrooms and offices were not worthy of the district or a credit to the Company. That state of affairs had now been remedied and, in congratulating Mr. Harold Turner, of Haywards Heath, the architect, and Mr. E. H. Munnion, of Ardingly, the builder, he said the Directors were satisfied they had got a very good job. They were now able to show apparatus in operation in proper surroundings and had examples of the most modern forms of gas lighting, most of them operated by switches. They had also an excellent room for lectures and demonstrations and had engaged an expert for that purpose.

Sir REGINALD BLAKER, declaring the showrooms open, remarked that the undertaking had progressed from year to year, enlarging its scope and its activities and maintaining the excellence of its service. Although he felt it undesirable that the small trader should be eliminated, he realized that an undertaking performing vital public service could only perform its duties efficiently to the benefit of the consumer by amalgamation and enlarging its scope. He thought that the healthy rivalry between gas and electricity had led to a marked efficiency in both undertakings. He congratulated the Company on the generous facilities they gave employees for service in the Territorial Army and praised both architect and builder on creating a great asset to the Broadway, Haywards Heath.

The Chairman presented Sir Reginald with a silver salver to mark their appreciation of his presence on that occasion.

Guests of the Company at Luncheon.

At luncheon which followed at the Perrymount Cinema Restaurant, the CHAIRMAN, proposing the toast of "The Guests," said the Company, as one of the biggest ratepayers, appreciated the efforts made by the local Council for the good government of the district and pointed out that their own continued success was dependent upon it, for unless Haywards Heath and district was kept attractive they would as a Gas Company enter the doldrums.



The Chairman, Mr. W. H. Bennett, presents Sir Reginald Blaker with a memento of the occasion.

Mr. F. W. MACKINNEY, C.B.E. (Chairman of Cuckfield Urban Council), replying for the guests, said the new showrooms proved the astonishing multiplicity of uses to which gas was now being put.

The Managing Director of the Company, Mr. A. E. WHITCHER, proposing the health of the Architect and Builder, said that the work had been beautifully designed and beautifully carried out.

Mr. TURNER, responding, said the Directors gave him "a fourth-rate extinct cinema and told him to make a showroom of it," and he described the building as not modern, but soft and pleasant and one that would mellow with the years. It had been the happiest job on which he had been engaged.

Mr. MUNNION also responded and said that, although his first thought was that the old building should have been set alight and demolished, the new showrooms indicated that craftsmanship was still in existence in country districts.

Mr. R. LOWMAN (Sales Manager of the Gas Light and Coke Company) thanked the Chairman and Directors for their hospitality, and Mr LEES STENNING (Deputy Chairman) briefly replied.

Amalgamation and Grouping

United Kingdom and Yeadon.

Close Brothers, Ltd., announce that the United Kingdom Gas Corporation, Ltd., has acquired over 90% of the ordinary stock of the Yeadon and Guiseley Gas Company, the transaction being effected entirely by an exchange of preference shares of the Corporation for ordinary stock of the Company.

Yeadon and Guiseley Gas Company is the twenty-third Yorkshire gas undertaking to be acquired by the United Kingdom Gas Corporation, and increases the total number of undertakings under the direct control of the Corporation to 48.

Severn Valley and Nantwich.

Application is intended to be made to the Board of Trade by the Nantwich Gas Company, a constituent Company of the Severn Valley Gas Corporation, for a Special Order, under the Gas Undertakings Acts, 1920 to 1934, with the object *inter alia* of vesting in the Company the Undertaking of the Nantwich Urban District Council.

Gas Section Offices, Board of Trade

The offices of the Gas Section of the Board of Trade are now situated at Clarence House (third floor), 4, Central Buildings, Westminster (telephone number, Whitehall 5140). The official address to which all communications should be sent will continue to be the Offices of the Board of Trade, Great George Street, S.W. 1.

Buxton Scores a Double!

A dart's "double" was scored by the Buxton Corporation Gas Department when they linked up a cookery display and the Buxton Darts Doubles Championship. The highly topical cooker window display was the "Good Cooks Dart to Gas" display, which featured the "New World" cooker. Reference to this display has already been made in these columns. Also displayed was the *Buxton Herald* Challenge Cup. One feels that even the "Grand Harpoons" of the darts world must envy the accuracy of the "Regulo" automatic oven-heat control.

New Carbonizing Plant at Chard

Following on the decision to install a new production unit at the Chard Corporation Gas-Works, an order for an installation of Glover-West continuous vertical retorts was placed with West's Gas Improvement Company, Ltd., in March, 1937. The new plant began operation on Jan. 25, 1938, and was officially inaugurated by Major Sir George F. Davies, C.V.O., M.P., on May 20.

An interesting point about the plant is that two sizes of retort are embodied in the setting. Two retorts of the 50-in. "New Model," and one of the 40-in. size and similar type are arranged in one bed, but as three distinct and separate units. Any one retort can be completely shut down without affecting the operation of the others. The capacity of the installation can be increased at any time simply by re-setting the smaller retort to the 50-in. size. Provision has also been made for a future extension of one retort if required. Either of two step-grate producers is able to generate fuel-gas for the whole plant, so that one of them functions as a reserve unit.

The coke extractors below the retorts are operated by a driving gear arranged in an overhead position, leaving the floor space in the end bay of the retort house free from obstruction. Two steam engines are housed within the building for this duty.

The handling equipment of the plant comprises a 25 cwt. steam driven lift, which takes coal and coke wagons and is also provided for passenger use. Coal is elevated to the overhead storage bunkers by this means, and coke to the producer-charging level. The hoisting gear shares the interior engine house with the coke-extractor driving engines.

Steam generation by means of surplus heat in the waste gases from the retort setting is included in the new scheme. For this purpose a boiler of the Spencer-Bonecourt vertical natural-draught type, designed to raise steam at 80 lb. per sq.in. pressure, is arranged at the retort-charging level of the plant. Provision for the waste gases to be augmented by producer-gas whenever necessary ensures that the boiler can continue at full capacity should the setting be partially out of operation.

Platforms and flights of staircases are distributed about the plant to give free access to all points, and the usual range of indicators and recording instruments is included in the retort-house equipment. The retort-house building is of the steel-framed type with reinforced brick panels.

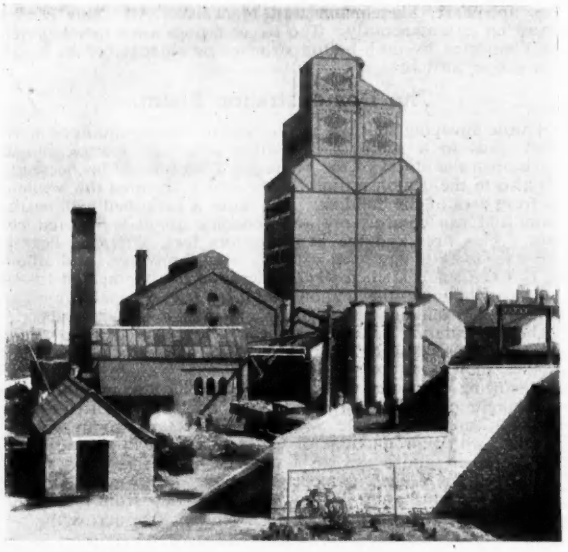
The results obtained are well up to the guarantees. Over a month's working 20,840 cu.ft. of gas at 450 B.Th.U. was made per ton of coal carbonized, with a maximum of 21,400 cu.ft. But the interesting feature of the results is the rapid variation which is possible in the output of the plant to meet fluctuations in demand. On one day, for instance, the output was reduced to 101,300 cu.ft., whereas the same two retorts in operation had produced 150,000 cu.ft. on the previous day.

INAUGURATION OF THE NEW PLANT.

The inauguration of the new installation was witnessed not only by members and officials of the Town Council and other prominent residents of the district, but by gas engineers from many Somerset, Devon, and Dorset towns, as well as from places as far distant as Manchester, Heywood, and Bristol.

Supporting Sir George Davies at the opening ceremony were the Mayor (Councillor T. Dolling, J.P.), the Chairman of the Corporation's Gas Department Committee (Alderman H. E. Dening), the Town Clerk (Mr. J. A. Forward), Sir Frederick J. West, C.B.E., J.P., M.Inst.C.E., Chairman of West's Gas Improvement Company, Ltd., and Mr. E. H. Greenaway, Engineer and Manager of the Chard Corporation Gas Department.

Having been briefly introduced by the Mayor, Sir GEORGE DAVIES described the occasion as a mark of that municipal progressiveness which had been associated with the history of the ancient borough of Chard. He thought they should express their indebtedness to Sir Frederick West and his firm, who had been responsible for the erection of the new plant, which he felt had made a link between Chard and that great industrial centre of the north, Manchester. If any future development at the works resulted in another contract for the firm, he was sure they would



The Chard Corporation Gas-Works as they appear to-day. A view showing the New Glover-West Vertical Retort Installation.

carry it out as efficiently as they had carried out this one. Sir George then unveiled a bronze plaque on the exterior of the wall of the new building, remarking, as he did so, that it bore the names of those who were officially connected with the Undertaking.

The Mayor having thanked Sir George Davies for performing the opening ceremony, the party made an inspection of the new plant and of the entire works, and many points were explained to them.

Afterwards the visitors were conveyed to the Town Hall, where luncheon was served. Alderman DENING presided.

Sir GEORGE DAVIES gave the toast of "The Borough of Chard." The ceremony they had witnessed that day showed that those who were in charge of the interests of this community were as progressive as could be found anywhere, in the interests of the ratepayers and the citizens as a whole, and he had always been proud to think that he had become closely associated with what was one of the smallest but by no means the least important and progressive boroughs in England.

The MAYOR responded.

Sir FREDERICK WEST, submitting the toast of "The Chard Gas Undertaking," said it was hardly his place, perhaps, to commend the Chard Gas Undertaking for their foresight in acquiring the installation, but he would like to say that apart from the fact that in a town like Chard it was very important they should have a plant which fitted in with the amenities of the district, it also meant that, while the operations were very much less laborious for the workpeople, the principal officials would have more responsibility in looking after the operations of a plant which was built on scientific and technical lines. Sir Frederick mentioned that the previous day he had attended the celebrations at Stretford in Lancashire of the extension of their plant. The motto of that undertaking was "Service and Efficiency." That was a motto for all gas undertakings in this country, and it was one which he thought Chard, too, was carrying out from the point of view of rendering a valuable and efficient service to its consumers.

Alderman DENING responding, said that the Chard Undertaking had extended its mains beyond the borough. He believed that the service given in the new area had given satisfaction to the consumers, and the departure had been a matter of satisfaction to the Department, too. "For this undertaking," said the Chairman, "we have to thank our Engineer and Manager, Mr. Greenaway. It was through his foresight that the suggestion first came before us, and he put it to the Committee in such a way that they had no hesitation at all in recommending it to the Council, who approved it, and I think the work has been carried out to the complete satisfaction of all."

The plant was actually putting out more gas than the guaranteed figures, and he thought they had done the right thing in going in for this scheme. Messrs. West's had carried out the work in an admirable way.

Mr. H. H. BROWN, Engineer and Manager of the Exeter Gas Company, responding to the toast of the visitors, commended the design and the housing of the plant. He was sure that the Chard Gas Department would find the benefit of it in years to come.

Order or Chaos in the Coke Market

To-Day's Problems and Their Solution

1.—Facts and Figures

In the belief that the present and prospective coke market situation indicates an urgent need for a co-ordinated policy of commercial development, the "GAS JOURNAL" has commissioned an independent investigation by one who is neither technically nor commercially interested in the coal carbonizing industries. The interests of producers, distributors, and consumers have all been given due weight, and it is proposed to deal with the subject from three aspects. First the statistical position is examined; then the problems confronting coke producers to-day are considered, and lastly, a solution of these problems is suggested—the gradual development of regional coke associations, leading ultimately to a national body, which would regulate the position in such a way as to obviate the possible need for Government intervention.

There is probably no more fascinating subject for study in the industrial and commercial world to-day than the economic changes which are compelling the two great branches of the coal carbonizing industry to seek an increasing measure of co-operation in the production, marketing, and utilization of coke. Conditions have changed completely in the last few years. The gas industry, which less than thirty years ago found its coke almost unsaleable, has cultivated a domestic and general industrial market for every ton of coke it can produce, and the coke oven industry, which formerly catered almost exclusively for the iron and steel works, is being split into two sections, the older colliery coke oven section which is being driven into the general industrial market, and the newer steel works section, represented by the installation of ovens as integral parts of steel making plant, catering purely for the works with which they are connected.

Recent Coking Industry Developments.

Changes in the coking industry during the past ten years have been rather of this nature, that the ironmasters have been building coke ovens where previously they bought either all or most of their coke from merchant undertakings, usually owning collieries. The reason for this has been that the tendency is to develop co-ordinated works wherein coke can be produced and the whole process of steel manufacture right through to the semi-finished and finished products can be efficiently carried out in a single establishment. A striking example of this is to be found in the development at the Normanby Park Works of John Lysaght, Ltd., at Scunthorpe, Lincs. There is a saying that in the modern bacon factory every part of the pig is utilized except the smell. Here every part of the coal that enters the works is utilized in a perfectly balanced heat system, and not even smoke is discharged. A good many of the colliery coke ovens that used to supply coke to the steel works are *force majeure* selling more and more coke in the open market for domestic and general industrial use.

On the other hand, of course, the supplies of good quality coking coals are limited and the steel works are drawing more and more heavily upon those supplies, so that there is less inducement for the colliery owners to produce coke for the blast furnaces. The large amount of coke now produced at steel works has the effect of taking a lot of coking coal from the open market, and at the other end it leaves a good deal of coke free which used to go into the iron works. Colliery coke oven owners are therefore becoming increasingly interested in the general inland market, and it is this fact that is prompting the necessity for some kind of co-operation with the gas industry.

The amount of coke available for general purposes depends to a considerable degree on the amount required for the metallurgical industry, and the acute shortage recently experienced was due to the enormous demand from that direction. This demand has now eased off to a great extent, and the coke oven owner seems to be facing a considerable surplus of production.

Taking the long view, more coke is being used in general industry and in the domestic field and less and less raw coal is being consumed. There is, however, almost certain to be a surplus of coke in the immediate future, but it is no use sitting down and waiting for a difficult situation to arise. The use of coke is growing rapidly, and whatever may be thought about the ultimate supercession of coke by gas the very question of economics prevents that from coming too quickly, and in the meantime there is an enormous amount of raw coal burnt that should be replaced by coke.

For one thing, the consumer must be taught how to use it. He must learn to discriminate between one type of coke and another and to know the best coke for domestic use. Efficiency in utilization should be the keynote of development for bringing coke into the inland markets. Appliances in which coke is used should receive attention equal to that devoted to the quality of coke.

Production at steel works will fluctuate in direct relation to the requirements of the steel industry. Colliery coke oven output will tend to increase with the steady modernization of ovens and the erection of new ones, and gas-works coke will clearly pursue the gradually rising curve of gas consumption. The one great factor is that as the steel works make themselves more and more independent of outside ovens the product of those ovens must come into the open market.

Official Statistics.

The annual report of the Mines Department for 1936—the latest available—shows a total output of 26,485,988 tons of coke in Great Britain, against 23,922,569 tons in the previous year. Of the total output, 13,751,470 tons were oven coke and 12,734,518 tons were produced at gas-works, the corresponding figures for 1935 being 11,939,453 tons of oven coke and 11,983,114 tons from gas-works, so that the relative positions of coke ovens and gas-works have been reversed. Coal carbonized in coke ovens totalled 20,059,666 tons in 1936 against 17,436,674 tons in 1935; for gas-works the figures were 19,056,470 tons of coal in 1936 and 18,033,192 tons in 1935. A total of 7,044 coke ovens were in use during the year, compared with 6,901 in 1935. Of the total gas-works production of coke, 8,417,149 tons were sold, against 8,039,901 tons in the previous year. Exports amounted to 2,316,257 tons, of which 1,442,711 tons were from ovens and 871,304 tons were from gas-works.

Four hundred and thirteen new coke ovens with a total capacity of 6,838 tons of coal per day were completed during 1937, some of which were in replacement of obsolete plant, but it was calculated that production capacity was increased by some 1,000,000 tons of coke per annum. New ovens totalling 318, with a capacity of 6,654 tons of coal per day, were ordered from contractors, orders from steel works outnumbering those from collieries by more than three to one.

In the four years 1934-1937, new ovens to carbonize 17,725 tons of coal per day were built at steel works and 664 ovens with a capacity of 9,773 tons of coal per day were installed

at collieries. The average capacity per oven, it will be noticed, was nearly 50% greater in the steel works than at the collieries. On the whole, however, it cannot be said that the developments at steel works were accompanied by any substantial slackening off in the collieries—a fact which indicates that more and more coke must find its way into the market that was at one time covered by the gas industry. Production of coke from all sources indicates a surplus this year over all current market demands of something in the neighbourhood of 4 million tons, increasing to 7 million tons next year, even if the steel works continue to take as much as they are taking at present.

Domestic and general industrial coke consumption (*i.e.*, excluding the steel industry) is approximately 13 million tons a year, of which nearly 9 million tons is gas coke and the balance oven coke. The demand in these markets has increased by about 8% per annum over the past three years. Last year about 850,000 tons more gas coke was sold than in 1936, yet in many instances the supply was not equal to the demand. The gas industry sells over 60% of its product in the domestic market.

While on the subject of statistics it may be recorded that as the result of research in the development of coke burning appliances in the London area there are now something like 150,000 domestic coke boilers installed each year, consuming 450,000 tons of coke. Power stations are taking 250,000 tons of breeze and open coke fire sales have reached 100,000 a year in the area covered by the London and Counties Coke Association.

The serious slump just after the war led to the discovery that oven coke could be sold in the market which had previously been served only by the gas industry, and considerable quantities of coke at low prices were sent to London where the London Coke Committee, the predecessor of the present Coke Association, had already cultivated a market for their coke. Since that time there has been a considerable move on the part of the coke ovens towards the domestic market, and provided the market is properly developed there is no reason why it should not absorb all the surplus from the coke ovens at reasonable prices.

Sufficient has been said to indicate that there is a big problem to be faced if order instead of chaos is to prevail in the coke market—a problem that calls for early and well-planned solution. Whether the producers like it or not, there is no doubt that the day of individualism in selling a national fuel is past, and the salvation of the coking industry lies in long-sighted co-ordination in production, marketing, and utilization. Like the gas industry it has long since realized the value of research on the technical side; now is the time to apply a similar enterprise to the commercial side.

The next article will deal with the general problem, and in the third an attempt will be made to find a solution.

Flash Tube Ignition Device

[A Communication from the Watson House Laboratories of the Gas Light and Coke Company]

Flash tubes for the ignition of gas have long been known, but not all existing designs are absolutely reliable, or suitable for application to heaters other than those for which they were designed. The results of some experiments recently carried out at Watson House on the general behaviour of flash tubes may therefore be of interest to those concerned with the design and use of gas appliances.

The success of a flash tube depends on obtaining an air-gas mixture in it that will propagate an explosion wave at a greater velocity than that of the injected mixture. The object of the experiments was to establish approximately the limits of size of tube for the satisfactory flash ignition of pilots of varying gas rates (0·2 to 1·2 cu.ft. per hour), and to determine whether any features of tube design notably affected the reliability of ignition.

In the preliminary tests, glass tubes were used set up as in fig. 1, tube 1. The approximate limits of (1) diameter of tube, (2) length of tube, (3) the distance AB between the tube and the injector, were determined, using a semi-bunsen pilot.

Results.

(1) *Diameter of Tube.*—The lower limiting tube diameter for satisfactory flash back was found to be 0·2 in. Satisfactory results were obtained with tubes up to 0·5 in. diameter, with gas rates between 0·25 and 1·2 cu.ft. per hour.

(2) *Length of Tube.*—Between 5 in. and 18 in. the length of tube had little effect on reliability, but at the lower gas rates the longer time required to fill a long tube with an ignitable mixture is disadvantageous.

(3) *The Distance AB.*—For tubes 0·25 in. internal diameter flash back occurred regularly over the ranges $\frac{1}{2}$ in. to $2\frac{1}{2}$ in. for a gas rate of 1 cu.ft. per hour, and $\frac{1}{2}$ in. to $1\frac{1}{4}$ in. for a gas rate of 0·25 cu.ft. per hour.

Ignition of Secondary Pilots.

The explosion wave igniting the injector or main pilot spreads over a wide area. Secondary pilots situated on either side of the line AB (up to $\frac{1}{2}$ in.) and up to $1\frac{1}{2}$ in. behind the main or injector pilot can be ignited regularly.

The above experiments were repeated with brass tubes in place of glass, with no appreciable alteration to the results, although it must not be assumed that with larger tubes the results would be independent of the thermal conductivity of the tube material.

Lateral Displacement of the Injector Jet.

For the simple arrangement shown in fig. 1, when the distance AB is small lateral displacement of the injector jet such as might occur during manufacture, assembly, &c., does not greatly affect the reliability of the flash tube. As AB increases, however, correct registration of the jet becomes essential and the effect of cross draughts is more apparent, though this may be minimized by using a suitable screen. Various simple designs of tube were tried to overcome these

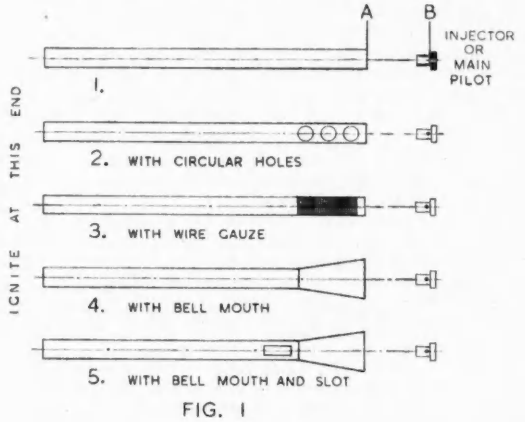


FIG. 1

difficulties. Fig. 1 (tubes 2, 3, and 4) shows some successful modifications.

The advantages and ranges of these tubes may be summarized briefly, as follows:

Tubes 2 *and* 3 can be used for values of AB up to 1 in.

Tube 3.—Most satisfactory when AB lies between ¾ in. and 2½ in. At distances less than ¾ in., lateral displacement of the pilot tends to cause failure.

Tube 4.—Over the range 0-1 in. compensates for greater lateral displacement of the pilot than any of the other tubes. When AB exceeds about 1¼ in., however, too great dilution of the gas-air mixture takes place.

Replacement of the semi-bunsen by a luminous pilot did not appreciably affect any of the foregoing results.

The angle of inclination of the tubes had little effect, flash back occurring with the tubes in any position, including vertically downwards. Tests with these tubes in combination with branched tubes (fig. 2) indicated that a device of this sort could be used to light multiple pilots from a single source.

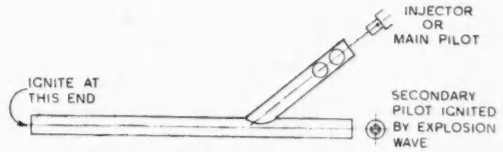


FIG. 2

The practical advantages of these tubes may be summarized as follows:

(1) The correct air-gas ratio to propagate an explosion wave is more easily induced in the flash tube, and the ignition of the primary pilot is 100% certain.

(2) The various tubes permit a wide range of adjustment of the pilots and gas rates without affecting the reliability of ignition, and permit the injector to be brought nearer to the flash tube than has hitherto been usual.

(3) A wider tolerance is achieved allowing for displacement of the injector pilot during manufacture, installation, servicing, &c., or for displacement of the pilot gas stream by corrosion, draughts, or other causes, without affecting the reliability of ignition, thus reducing the precision required in manufacture and the cost of the device.

(4) Greater freedom of design at less cost, with simplicity of operation and safety to the operator, is obtained.

For example, the device can be used for lighting inaccessible or distant pilots on water heaters, or other gas appliances, so that the pilot may be arranged more conveniently in relation to gas connexions, safety cut-offs, or other fittings (*cf.* fig. 3).

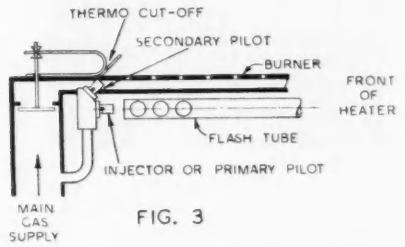


FIG. 3

(5) The tubes are equally reliable with luminous, semi-bunsen, or bunsen pilots. Hitherto mostly bunsen burners have been employed. The gas consumption is small (a suitable range is between 0·25 and 1·2 cu.ft. per hour for tubes 9/32 in. internal diameter).

(6) The tubes may be used in connexion with other means of ignition—(*a*) catalytic, (*b*) electric, or (*c*) flint—enabling an optimum ignitable mixture to be directed at the igniting source.

"The British Gas Industry"*

Reviewed by T.A.T.

This is a very interesting little book giving a survey of the Gas Industry from a new angle. It is written well, objectively and yet with a seasoning of intelligent criticism.

To begin with, Mr. Chantler complains, and justly we think, of the confusion between cubic feet and therms in the Official Returns and of the inadequacy of the Returns. Perhaps the absence of statistics relating to non-statutory undertakings is no great defect, but we do think that Returns should be given in both cubic feet and therms and that the declared value should be stated in every case.

After this preliminary "grouse," Mr. Chantler gets down to a fascinating story told in a lively way. In five chapters he treats of the growth of the Industry (not at all a bad account for an "outsider"), the structure of the Industry (by which he means an analysis of the distribution of the Industry geographically and according to size, together with an account of the organizations controlling the Industry and the state of the market for by-products), the development of public regulation of supply (to which he devotes two chapters), and price policy.

"Density of Gas Consumption" is a convenient term for figures relating to consumption per consumer and per mile of main. There are several useful tables in this early part of the book, which should be kept up-to-date for reference.

"The outstanding characteristic of the economic development of the Gas Industry since 1920," he says, "has perhaps been neither expansion nor stability but consolidation. Integration of the gas and coke oven industries has begun; bulk supplies are being given and taken on an increasing scale; regional grids are being introduced; amalgamation has been going steadily forward among the companies and to a less extent among local authority undertakings; co-operative schemes for by-product marketing have come into being; and recent years have witnessed a rapid expansion of the holding company movement." Mr. Chantler is much interested in integration and co-ordination. He fully recognizes the fact that efficiency does not necessarily increase with size—"the large works is not cheap to run merely because it is large" (Mr. George Evetts)—and that economy is bound up with coke sales, which must be effected locally.

Area co-ordination takes place by amalgamation among companies and by absorption of the joint board among municipal undertakings. But Mr. Chantler is enamoured of the proposal to set up Gas Commissioners to deal with this and some other problems (*e.g.*, price policy) in the organization of the Industry. Very few gas administrators, it is thought, will support this view, but, at any rate, they will find the case for it stated here.

The two chapters on the public regulation of gas supply are exceptionally well written and contain a better account on this subject than we have ever seen before. Mr. Chantler is not very greatly impressed by price limitations imposed by statute. "The fact is that under the market conditions which have obtained since 1920 the practical limit has not in general been the statutory maximum, but the competition which gas has met from electricity and solid fuels." But analyzing the three main methods of price control, he says, "during 1935, of the 409 statutory gas companies operating in Great Britain, 167, selling 97 million therms, worked under the maximum price system; 217, selling 310 millions, under the sliding scale, and 25, selling 504 millions, under the basic price system."

The discussion of price policy is particularly good. Here is a concise and useful statement: "As a generalization which requires qualification in specific application, it may be stated that for cooking and water heating, 5 therms of gas are equivalent to 100 units of electricity, and for water heating and space heating, to 1 cwt. of coal. Gas can easily compete with electricity for cooking and water heating when gas is sold at 10d. per therm and electricity at ½d. per unit; but a price of 4d. per therm is necessary for gas to compete with coal for water heating and space heating when coal is sold at 1s. 8d. per cwt."

Analyzing costs from works to consumer he arrives at the conclusion that the "theoretically correct rate is a myth." "Price policy," he says, "is designed primarily to sell gas, not to mirror costs allocated in some more or less arbitrary manner." And again, "price differentials should be determined by what is necessary in order to secure particular loads, or to *charge what the traffic will bear*." Price policy must be based on market research and must be governed at least as much by such psychological factors as the social and political conditions in the district as by an attempt to make a mathematically correct allocation of the various items of cost to the different grades of consumer.

* The British Gas Industry, an Economic Study, by Philip Chantler, of the Economic Research Section, University of Manchester. Manchester University Press, pp. viii., 141. Price 7s. 6d. net.

EASTERN COUNTIES GAS MANAGERS' ASSOCIATION

Presidential Address

OF

W. C. CHAPMAN,

Engineer and Manager of the Boston Gas Light and Coke Company.

Presented at the Half-Yearly Meeting of the Association held at Boston on May 19, which was reported in last week's issue of the "JOURNAL."

THE PRESIDENT.

Mr. W. C. Chapman entered the Gas Industry in 1899 as Coke Clerk with the Great Yarmouth Gas Company, subsequently passing through the laboratory and drawing office under the training of the late Mr. W. J. Carpenter, then Engineer and Secretary to that Company. Mr. Chapman later became Assistant Engineer and Manager, and on Mr. Carpenter's death was appointed Chief Technical Assistant to Mr. P. D. Walmsley, his successor, spending three years with him during the reconstruction of the Yarmouth Works. In December, 1922, he was appointed Assistant Engineer and Manager to the Boston Gas Light and Coke Company, of which Mr. J. S. Dougall was then Engineer and Manager. On the latter's decease in 1928, Mr. Chapman succeeded to the position of Engineer and Manager which he holds to-day.

The Boston Gas Light and Coke Company was established in the year 1825, and like many other companies, perhaps, of similar size, has had its ups and downs during its 113 years of existence. There is no question, however, that never during the whole of that period has it been of greater service to the community of this town than at the present time, evidenced by the fact that sales of gas and appliances are continually increasing year by year.

It may be interesting at this stage to indicate the growth of gas sales, as under:

	1,000 Cu.Ft.	No. of Consumers.
1857	23,900 ..	2,000
1887	40,511 ..	2,059
1917	81,607 ..	5,175
1937	180,000 ..	7,472

More striking statistics are furnished by the undermentioned particulars over a period of 15 years:

—	1922.	1936.	Increase.
			%
Population in area	21,006	22,109	5·2
Gas consumers..	5,300	7,257	36·9
Gas sales, mill. cu.ft.	110	178	61·8
Gas cookers	2,408	4,906	103·7
Gas prices, 1,000 cu.ft.	5s. 1d.	3s. 4d.	34·4*

* Decrease.

It should be stated that no public supply of electricity was available in this town until the year 1924, and that the industrial load is almost negligible, amounting to approximately 6 to 7% of the total sales.

Let it not be supposed that the foregoing figures are furnished in an air of self-complacency; only too well do I realize that in a town such as this, even with a principally domestic load to cultivate, the field for further expansion of sales is unlimited. Our Industry has only commenced to explore the water heating load and the public generally are still unaware of the many advantages attending the use of gas for such purposes. Furthermore, we, as an Industry, must take a much greater part in demonstrating to the public the part we can play in the problem of smoke abatement.

Boston, like many other ancient Boroughs, has during the past few years been steadily dealing with the demolition of slum property, and has completed several Housing Schemes in the Borough. We shall all, I feel, agree that it is highly desirable that the working classes should have the opportunity of spending their lives in more pleasant and comfortable homes and surroundings; indeed, is it not one of the aims of our Industry to help secure comfortable and convenient homes by the full utilization of gas?

There is no question, however, that these changes have had a marked effect upon the finances of public utility undertakings, for with the demolition of slum property the greater proportion of the gas installations become merely scrap and represent a considerable loss. The layout of the new housing schemes, involving new mains, services, and internal piping, also represents a very considerable outlay. In the first two schemes here we were able to secure both the lighting and the installation of gas coppers and cookers, but later the policy of the Council was altered and electric lighting was installed in the houses erected, my Company fixing gas cookers and coppers, the coppers being provided by the Council and the cookers free under the prepayment installation.

For some time tenants in the later housing schemes applied for gas lighting points and latterly the Council have agreed that such could be provided free of charge to them. As a result a number of the houses now have both electric and gas lighting available. In the latter schemes my Company have undertaken to lay the necessary mains, service pipes, and internal piping, and provide a free cooker and lighting points under a prepayment installation, the Council providing the gas copper.

I should here like to pay tribute to those responsible for the manufacture of the various appliances needed for the consumption of our principal commodity. The very striking advance made in the past few years in the design, efficiency, and appearance of all types of gas consuming appliances has provided a most valuable stimulus and help to us in our fight against competitive fuels.

The selling and fixing of the most up-to-date appliances on the most liberal terms to the consumers is an essential part of a progressive undertaking's policy, but, to my mind, more important still is the need for ensuring that each and every consumer has placed at his disposal an ample supply of gas at a sufficient pressure and consistent specific gravity—in short, a trouble-free service. Too much care cannot be taken in endeavouring to secure ideal conditions in these matters.

I regard it as most important that a regular and systematic inspection of consumers' appliances should be carried out, and certainly believe that the cost entailed in such work is more than repaid by the obtaining of the goodwill and confidence of the consumer.

For many years my Company has concentrated on the overhaul of its distribution mains, the replacement of under-

sized service pipes, meters, and internal carcassing. During the past 12 years a sum of £18,000 has been expended on the laying of new mains and replacing undersized mains alone.

You will no doubt have already noted that my Company has a fair share of the street lighting. Up to the early part of 1927 each public lamp was served by a separate meter housed in a brick pit at the base of the column. The complete installation was the property of the Corporation who lighted and maintained the lamps, the Gas Company supplying the gas only. At the time of the introduction of a public supply of electricity to the town the Council decided to install a number of electric street lamps which, perhaps owing to their novelty and the fact that they were complete new lighting units, made a good impression as compared with the then gas installation. My Company therefore suggested the consideration, by the Council, of a proposed complete overhaul of the gas lighting installation. After much consideration the Council decided to accept our scheme which involved 75% new lanterns, all new burners, service pipes, wave pressure controllers, reflectors, alterations of frogs, wall brackets, and other details. My Company agreeing to spread the capital charge over a period of years, the whole of the work was carried out during a period of three months, and the installation of the pressure wave system has been highly successful. It is interesting to reflect that at the present time we have a larger number of public lamps in operation than obtaining before the introduction of the public supply of electricity, and additional lighting points are regularly being erected. The present satisfactory position has been created, I believe, because the Company has been ready to meet the Council's wishes, to take entire responsibility for the maintenance of the installation, and to supply gas on the most favourable terms.

Coke.

Fifteen years ago it was nothing unusual for our coke yard to be entirely blocked with coke. At that time the Company did not sell direct to the consumer, and the business was entirely in the hands of small hawkers and coal merchants. In 1926 the Company first procured its own transport and commenced delivering coke direct to the consumers. From that time steps were taken to supply a broken coke for domestic use. Even at this time, with the growth of the sales of gas and increased production of coke, we occasionally found ourselves choked up with stock in a yard which was filled with about 300 tons. It was therefore decided to increase the yard area, and this was carried out to enable us to store 1,200 tons. Since then our largest stock has been about 100 tons.

The advance in the local consumption of this product during the past eight years has been most remarkable, and as a result the tonnage loaded for use outside the Company's area now amounts to no more than 10% of the annual production. Concurrent with the increased local demand for graded coke we have at intervals found it necessary to augment our coke cutting or crushing plant, and during the past year a new Cort's cutting plant has been installed with a capacity of 7 tons per hour. Apart from this plant it becomes necessary at times to use another portable machine to augment the production of graded coke. It is interesting to note that the local demand for the cut and graded coke now absorbs 50% of the total tonnage of coke available for sale.

Tar.

It may interest members to learn that as long ago as the year 1865 the Boston Gas Light and Coke Company realized the value of this product of our gas manufacturing process, for in that year plant was erected for the distillation of coal tar, for dealing not only with its own production but also with purchased supplies from Lincoln, Peterborough, Spalding, Sleaford, and many other towns in the county of Lincolnshire; and during excavations carried out in the past few years at the Boston Works evidences of the old pitch beds were discovered.

Although at the present time a total distillation plant is not in operation, we do utilize our entire production of crude tar for the preparation of road tar and a bitumen compound. In 1930 a new Woodall-Duckham T.I.C. plant was installed and has given very satisfactory service. At the time of the installation provision was made for the addition of a bitumen mixing plant at a later date, and two years ago this addition was carried out.

The entire annual production of tar is now disposed of for use by the Highway Authorities in this area, either in the form of dehydrated tar or as a bitumen compound.

It is with a certain trepidation I express the opinion that provided we in the Industry, from the medium-sized works upwards, take every step to prepare a good quality dehydrated tar or bitumen compound for disposal at a reasonable price, we should have no difficulty in placing this in our own immediate areas. Too much stress, however, cannot be laid on the importance of ensuring that the product you offer definitely conforms to the requirements of the Highway Authorities.

Crude Benzole.

Some 2½ years ago consideration was given to the question of the production of crude benzole, and after full consideration of the economics of the process it was decided to install a plant, it being felt that with the type of carbonizing plant in operation almost ideal conditions were present for benzole recovery.

The plant, of Newton Chambers & Co.'s construction, complete with static washer, was put into operation in July, 1935, and has worked practically continuously since that date, with complete satisfaction. Our annual production of crude spirit is approximately 36,000-37,000 gallons per annum, of 82% quality. The make per ton of coal carbonized averages 2·7 gallons.

The crude benzole is disposed under an agreement with the National Benzole Company, Ltd., and is pumped from the store tank into railway tank wagons on the works. I must confess that I have been greatly surprised at the almost trouble-free nature of the plant, and therefore exceedingly low labour charges involved. There are two important points which have been demonstrated since its installation—the almost complete disappearance of naphthalene trouble in the district and the reduction in the sulphur compounds of the gas. These advantages, coupled with the very satisfactory economic results of the process, should, I feel, engage the serious attention of all those who have not yet installed such a plant. Moreover, it does in some measure help to restore to the revenue a financial return which during the past few years has been lost by the very poor condition of the sulphate of ammonia market.

In the earlier part of my Address I have quoted figures showing the growth of the Company over certain periods, and it will be noted that during the period 1922-1936 the sale of gas increased by 61·8%.

It may be queried as to the reasons for such an increase in view of the relatively small addition to the population of the town during the years 1922-1936. It may be stated that the increased sales are primarily due to the policy the Company adopted in 1922, including extended facilities offered to the consumers in the matter of simple hire and hire purchase of up-to-date appliances. Here I may add that we are definitely of the opinion that it is a good policy to keep to a minimum the difference between the cost of appliances to the Company and the price at which they should be passed to the consumers. I have ever held fast to the principle that our business is to sell gas, and we should not look too closely at the profit which may accrue in the matter of appliance transactions. I am well aware that opinions in this matter vary very considerably in the Industry, and will no doubt constitute a serious difficulty in the organization of the proposed uniform selling policies.

Other contributing factors are the modernization of the distribution system, the opening of a central showroom not previously available, publicity through the local Press, poster hoardings, film shows, local organizations' publications, &c.

The Company's showroom, situated in the Market Place, the centre of the town, was acquired in 1928, and the sale of gas appliances has risen from the value of £1,487 in 1929 to the sum of £5,082 in the past year.

It is, I am well aware, very difficult to assess the amount of business which accrues from any form of advertising, but I am firmly convinced that it is to the interest of any undertaking to take as much advantage as possible of all channels available in its own area, in order to convey to the public the

many services which gas can offer and thus help to augment the splendid propaganda carried on nationally by the British Commercial Gas Association, of whose services we take the fullest advantage.

Coal.

I would like now to turn to one or two matters from a national point of view. All of us I presume have been much disturbed at the position which has arisen in the coal industry, a position which has had important and far-reaching repercussions in our own Industry. Generally speaking, I suppose it is the aim of every Gas Engineer to supply his principal commodity at the very lowest possible figure, and we all strive towards this very laudable ideal. In the past we have been able to secure our coal supplies under conditions governing commercial or industrial transactions for many decades, viz., free competition. The effect of the Coal Mines Act and the operations of the Selling Boards have, however, created a new set of conditions with which we, I think rightly, have some reason to be aggrieved. We are all, I feel certain, agreed that the colliery owner should receive a fair return on the capital expended, and that the miner should also receive a just reward for his labour, but the continued advance in the price of coal, the basis of our operations, produces in the mind a suspicion that the provisions of the Act are enabling the sellers to inflate unduly the price of coal. Moreover, other factors relative to deliveries, choice of fuel, ash content and cleaning, complaints regarding which were readily dealt with in the past, do not now appear to receive the consideration which they deserve. We can only hope that the Central Coal Council will be more amenable to the complaints of our Industry, who are primarily out to serve the public to the best of their ability, and that certain definite guarantees given in the Houses of Parliament during February last will be interpreted in their fullest and most liberal meaning.

Research.

I am not at all unappreciative of the research work undertaken by our parent body, The Institution of Gas Engineers, by the Gas Light and Coke Company, and by various firms of constructional gas engineers and gas appliance makers, all of whom have readily placed the results of their researches at the disposal of the Industry. I do feel, however, that more can, and should, be undertaken in this direction. I submit that as we all share in the benefit derived from the results of research, so we should all play our part in some measure in supporting this most important and valuable side of our great Industry. I do suggest that the time has arrived when some central body should be constituted, representative of The Institution of Gas Engineers, gas plant manufacturers, and gas appliance manufacturers, charged with the duty of establishing a national research laboratory to deal not only with the process of gas manufacture and by-products, but also with the utilization of coal gas, and that the financing of the work should be met by an annual subscription from each undertaking, graded according to its sales of gas.

Distribution and Sales Methods at Port Talbot

by
E. M. EDWARDS,
Engineer and Manager, Port Talbot Gas Department.

A Paper read at the Annual Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers at Aberdare on May 19.

When I was invited to prepare a Paper for this Meeting, I considered that one dealing with distribution and sales methods would probably be of interest.

During the last six years our annual gas sales have increased by 42·6%; gas unaccounted-for has been reduced from 10·6% to 5%; annual sales of appliances have increased from £3,861 to £17,962; and gas prices have been substantially reduced. Some factors that have helped us to obtain these results may prove of general interest, and the interchange of ideas resultant from a discussion would be of value.

In 1932 gas was manufactured at two Works, and it was decided to centralize production at one Works. The engineering work involved was extremely interesting, particularly as unnecessary capital expenditure was avoided, in view of the serious financial position of the Undertaking. To deal with the manufacturing section of this scheme is outside the scope of this Paper. I would, however, emphasize the point that too much attention cannot be paid to ensure the business progresses more rapidly than capital expenditure.

Before any sales development scheme can be proceeded with the saleable product must be suitable, and this applies to gas as well as to anything else. Gas of consistent calorific value and constant air-gas ratio is obtained by close technical control. Naphthalene is removed by the crude benzole plant.

In June, 1935, a "Dri-Gas" plant was installed, for removal of water vapour, in order to eliminate interior corrosion of distribution equipment and to prevent accumulations of water in mains and services. The startling reduction in meter repair costs, shown later, is largely attributable to the satisfactory working of this plant, and similar economies are being effected in repairs of mains and services. The oxygen content of the town gas is strictly controlled by analysis. Air is not admitted for purification purposes unless the oxygen content of the town gas is below the maximum permitted figure of 0·6%. We do not experience any gum troubles. I attribute this to the care taken to maintain the oxygen content at a low figure, also to the fact that the oil washing plant, for removal of naphthalene and benzole, precedes the purifiers.

The extraction of sulphur compounds is highly desirable, particularly in view of the development in the use of water heating appliances and flueless space heaters. Prior to benzole recovery the sulphur compounds in the town gas was 22 grains per 100 cu.ft. With a benzole recovery of 2 gallons per ton of coal carbonized, the sulphur compounds are now 10 grains per 100 cu.ft. While this is a considerable improvement, I hope eventually to reduce this figure further.

In order that centralization of production could be quickly effected it was decided to make use of the gasholders at Margam and Cwmavon by withdrawing gas from the town mains at off peak loads. The gas was allowed to flow back into the town mains at peak loads through district governors.

This system has functioned well for five years, in conjunction with a Widlake automatic pressure controller at Aberavon Works.

The anticipated further increases in sales will necessitate an increase in the capacity of the trunk mains. A scheme is now being developed for the installation of a high-pressure main for feeding into the low-pressure system at several points. The same high-pressure supply will be used for feeding the district holders, which are so valuable for levelling out the peak demands.

An unusual difficulty occurred when we found it necessary to replace the existing gasholder at Cwmavon Station, because the trunk main to this area was too small to supply the demand at peak load. The difficulty was overcome by installing a boosting set temporarily on the district, and we

were able to step up the pressure at a point along this trunk main, without causing inconvenience to consumers, while the work of renewing the holder bell was being carried out.

Unaccounted-for Gas.

Considerable attention has been given to reduction of gas not accounted-for. There are, of course, many sources of loss, but meters and mains and services in particular required attention. The result of a complete test *in situ* of every meter upon the district showed that 7% were registering slow, and these were attended to. A regular scheme of meter testing is now in force, with the object of testing each meter *in situ* once every five years. During April of this year 157 meters were tested, and eight were found to be registering against the Undertaking.

I attach great importance to meter testing, because losses in this direction are losses at selling price. Actual leakage from mains and services, while serious, is not quite as important, because the loss here is at manufacturing cost.

Our annual meter repair costs, for the last six years, are as follows:

	£		£
1932	1,349	1935	1,159
1933	1,119	1936	977
1934	1,150	1937	510

All meter repairs are carried out by the Department and the meters are thus closely examined internally, and detailed causes of failure noted.

In this district it is essential to safeguard against vibration, and movement of pipe lines. All new mains laid are fitted with joints that permit of some degree of flexibility, and a rubber ring joint has been found very successful. Services are wrapped and protected. Whenever services are being laid, or re-connected, they are tested for soundness with a simple form of bubbling bottle which is issued to each service layer. Special brass plates, bearing the word "Dual," are fitted to all services supplying more than one meter. The badges are screwed to the services immediately below the main cocks. I have found this precaution to be necessary, in order to prevent damage to meters when services are blown, and also to preclude the possibility of an accident due to a misunderstanding by a fitter.

We are now engaged upon a leakage test upon mains and services throughout every road in the area. When this work has been completed it is intended to test each section of the district once every ten years. When possible, long straggling supplies are disconnected temporarily, and the actual rate of leakage metered. In most cases we have to be content with barring, and the use of the usual types of leakage indicators. During tests made upon approximately 17 miles of mains we found 115 leaking main joints and 15 leaking services. I have found it profitable to work in close conjunction with water, electricity, Post Office, and sanitary authorities.

Attention to reduction of unaccounted-for gas is well worth while because, apart from other considerations, substantial improvements assist to delay capital expenditure upon manufacturing plant. The work carried out has resulted in reducing our gas unaccounted-for from 18,400,000 cu.ft. in 1931 to 11,635,600 cu.ft. last year. This represents a reduction from 10·6% to 5%.

Appliance Sales.

In considering this matter, regard must be paid to the purchasing power of the mass of consumers, also the degree of saturation of the district with modern appliances.

While Port Talbot is scheduled as a distressed area, I realize certain districts are in a far worse state than Port Talbot, and for all in those areas I have a very real sympathy. If the average income of the consumers is low, this is almost of necessity reflected in more difficult trading conditions for all who compete for the public purse. We are not only competing against other sources of light and heat, but also against others who provide certain of the necessities and comforts of life.

The incidence of cheap coal to miners makes development to this class of consumer very difficult. In our case I found it was essential for bold measures to be taken to increase sales of appliances, and it was realized that our schemes must be designed to meet the requirements of the low wage earners. Many schemes were adopted, but I will simply mention two of the most important—viz., the "Rebate Cooker Scheme" and the "Weekly Payment Scheme."

By reason of various improvements effected, it was found possible to reduce gas prices by 8d. per 1,000 cu.ft. to prepayment consumers, as well as to reduce the price to all other consumers.

Prepayment consumers constitute the great majority of our customers. It was decided to supply to prepayment consumers a modern all-enamelled cooker for 5s. deposit, fixed free, and the balance to be payable out of rebate, subject to a minimum payment of 4d. per week. (Since the increase in the price of appliances this figure has been increased to 5d. per week.) The scheme was commenced in April, 1935, and 2,891 cookers have been sold under this scheme alone. A similar scheme is now being introduced for gas fires and other apparatus.

Weekly Payment Scheme.

Our weekly payment scheme, introduced in May, 1936, has proved popular, and 1,312 customers have already adopted this system. I find there is a definite demand for the purchase of apparatus on these weekly payment terms, and it is largely a market that would not otherwise be reached, although we have the usual long period quarterly hire-purchase terms. Our practice is to attach special collecting boxes to the meter cash boxes, and the cash is collected by the prepayment meter collectors. The payment terms are 6d. or 1s. per week.

With a scheme of this nature more detail work is, of course, involved, but we must be prepared to face up to this if our business is to progress. The percentage of arrears for the financial year now ended is not more than two. In those cases where consumers persist in remaining in arrear with their payments, a time-tariff controller is fixed. This has only been necessary in rare instances.

Great importance is attached to canvassing, and we have at least four canvassing and maintenance attendants always upon the district. This team comprises one trained fitter and three ladies. Part of their work is to keep up-to-date our tabulated census of appliances in use.

Each year, throughout the Industry, we find there is a tendency for the costs of selling gas and appliances to rise. While niggardliness would be folly, prudence calls for careful control of expenditure. The question of waste effort and loss of time in the Distribution Department well repays investigation. After a careful survey of the position it was seen we would save money and give an improved service to our customers by centralizing our showrooms, offices, and distribution stores in one convenient building. The estimated net annual economy of £446 has been more than realized in practice.

In the formulation of a selling policy based upon long period hire-purchase, consideration must be given to the position of the Undertaking and consumers should employment conditions in the district become more difficult. One also has to remember the consumer has other demands upon his income. Care has to be taken not to oversell, and thus be faced eventually with a large stock of returned appliances, or, alternatively, so restrict the purchasing power of the customer that the money actually spent upon gas will be reduced.

The new Hire-Purchase Bill is of importance to us all, and it would serve a very useful purpose if our National Bodies could prepare a model form of hire-purchase agreement.

By giving close attention to sales development we have increased our annual appliance sales from £3,861 to £17,962 during the last six years. This corresponds to an appliance sale per consumer of £0·57 and £1·93 for the respective years. We have, wherever economically practicable, extended in various directions our distribution mains, and this together with new houses erected has meant that our consumers have increased from 6,878 in 1932 to 9,289 in 1937.

During the same period annual gas sales have increased from 153·2 million cu.ft. to 218·4 million cu.ft.—an increase of 42·6%. The gas sales per consumer per annum have increased from 22,274 cu.ft. to 23,510 cu.ft. during the same period.

This matter of gas sales per consumer per annum is extremely important, and we cannot afford to neglect any possible avenue of increasing appliance sales. Domestic lighting is a valuable section of our business, and last year we fixed 2,544 lighting fittings, and sold 3,121 lighting burners. Never-

theless, I realize competition is becoming more intense every year, and is likely to become more severe.

A complete survey is now being carried out upon the potentialities of large-scale industrial and commercial loads. Up to the present time, while we have increased our industrial sales, we have concentrated chiefly upon the domestic side.

As the position of the undertaking improved, it was found possible to effect substantial reductions in gas prices, and to introduce special tariffs for commercial, industrial, and fish-frying consumers. We were in the position of being able to release further revenue for price reductions, and I made a close investigation of the possibilities of the introduction of a suitable domestic tariff.

In order to obtain a clear understanding of the source of existing revenue, I first found it necessary to make a complete analysis of all consumers' accounts. As this may prove of general interest, details are given below:

	Number of Consumers.	Total Annual Consumption.
		Cu.Ft.
Slot consumers—		
Up to 10,000 cu.ft. per annum	2,016	13,332,200
„ 13,500 „ „	1,217	13,824,200
„ 15,200 „ „	480	6,916,400
„ 20,000 „ „	1,110	19,548,100
Over 20,000 „ „	1,832	51,830,500
Quarterly consumers—		
Up to 10,000 cu.ft. per annum	393	2,094,600
„ 13,500 „ „	179	2,132,800
„ 15,200 „ „	93	1,345,200
„ 20,000 „ „	248	4,212,900
Over 20,000 „ „	748	35,915,200
Public lighting	1	26,500,000
Fish-friers	12	2,049,100
Industrial	6	6,077,600
Totals	8,335	185,778,800

From the above figures it will be seen that the consumption per consumer varies considerably; 2,409 consumers use less than 10,000 cu.ft. per annum, and the existing flat rate prices to these consumers are only made possible by reason of the higher average consumption of other consumers. It must not be thought that the smaller consumer is necessarily the poorer consumer. Some of our lowest consumers are found among lock-up shops, large houses, and offices.

After careful consideration it was decided to introduce an optional domestic two-part tariff upon the following lines:

Fixed Charge.

This is based upon the rateable value of the house, excluding garage.

Up to £10 rateable value the annual fixed charge is 20% on the rateable value. Above £10 rateable value the annual fixed charge is £2, *plus* 2s. for each £1 by which the rateable value exceeds £10.

Quarterly consumers are each quarter charged one-fourth of the annual fixed charge.

Slot meter consumers pay 1/52nd part of the fixed charge each week, calculated to the nearest penny. This amount is inserted in the service charge collecting box attached to the meter.

Commodity Charge.

In addition to the fixed charge, all gas used is charged at the following rates:

Quarterly consumers	5·0d. per therm.
Slot meter consumers who provide their own installations	5·5d. „ „
Slot meter consumers with "free" installations	6·0d. „ „

The prevailing flat rate prices were as follows:

Quarterly consumers, 10·58d. per therm if under 20,000 cu.ft. per quarter.
„ „ if consumption is over 19,900 cu.ft. per quarter, the first 20,000 cu.ft. charged at 9·88d. per therm, and the excess at 8·70d. per therm.
Slot meter consumers, 12·0d. per therm, and alternatively 12·70d. per therm.

So much has been written upon tariffs that I do not propose to deal at length with the points for and against. After consideration, I decided that the only way to determine whether a tariff would achieve the desired purpose would be to try it out in practice. The tariff devised was one that could be controlled, and the theoretical immediate loss of revenue speeded up, or slowed down, in accordance with the extent to which the tariff was developed.

A block rate has the disadvantage that the loss in revenue will apply immediately to all consumers who are entitled to participate. With a two-part tariff the new method of selling gas has to be sold to the customer, and considerable work is necessary to persuade him of its advantages. One grave disadvantage of an optional two-part tariff is that, in general, only the consumers who receive an immediate benefit are prepared to participate.

In formulating a tariff it must be clearly remembered the main objectives are:

(*a*) To conserve existing consumption.
(*b*) To obtain new and additional business.

In our case it was decided to develop the new scheme quietly, to an extent sufficient for us to determine the results after a representative body of consumers had enjoyed at least twelve months on the two-part tariff rate.

The results below may prove of interest, because they give a summary of the revenue received, and the gas consumption, of such a representative body of consumers for twelve months before they embarked upon the two-part tariff, and for twelve months afterwards.

99 *Quarterly Consumers.*

On flat rate basis—	
Total gas consumption	4,210,900 cu.ft.
Revenue from gas	£779 4s. 2d.
Revenue from meter rent	£30 2s. 0d.
Total revenue	£809 6s. 2d.
On two-part tariff—	
Total gas consumption	4,212,900 cu.ft.
Revenue from fixed charge	£279 4s. 0d.
Revenue from gas	£373 3s. 3d.
Total revenue	£652 7s. 3d.
Average revenue of 99 consumers prior to tariff	£8 3s. 6d.
„ „ „ „ on tariff	£6 11s. 9d.
„ consumption of 99 consumers prior to tariff	42,500 cu.ft.
„ „ „ „ on tariff	42,500 cu.ft.

24 *Slot Consumers.*

On flat rate basis—	
Total gas consumption	832,200 cu.ft.
Revenue from gas	£176 19s. 1d.
On two-part tariff—	
Total gas consumption	958,200 cu.ft.
Revenue from gas	£93 8s. 6d.
Revenue from fixed charge	£52 12s. 0d.
Total revenue	£146 0s. 6d.
Average revenue of 24 consumers prior to tariff	£7 7s. 5d.
„ „ „ „ on tariff	£6 1s. 8d.
Average consumption of 24 consumers prior to tariff	34,700 cu.ft.
„ „ „ „ on tariff	39,900 cu.ft.

(NOTE: Declared calorific value is 425 B.Th.U. per cu.ft.).

I am submitting the results of our preliminary experience, because this subject of tariffs is extremely important, and information of the actual results obtained from tariffs is of some value. I have given separate groups of figures for quarterly and prepayment consumers because interesting conclusions may be drawn.

The detailed analyses of the individual consumer's accounts show that, in some instances very substantial percentage increases are recorded, but the total increase is not, on the face of it, encouraging. It must be remembered, however, this work is only in its initial stage and much remains to be done to obtain the results required.

From the figures obtained, several important conclusions may be drawn, and among them are the following points:

(1) A time lag will exist before the consumer realizes the advantages of low-priced gas.
(2) No increase has been recorded in the total consumption of quarterly meter consumers, and the reduction in revenue is considerable. These consumers previously had a high average consumption, and they should in any event receive first consideration when revenue is available for price reductions.
(3) Active measures are necessary to educate the main body of consumers to the advantages of a scheme of this character, and the development will entail steady canvassing and publicity work. This will take time, and from one standpoint is an advantage, because the initial loss of revenue may be controlled by the speed of the development campaign.
(4) To introduce a tariff to a consumer who is already using his existing appliances to the full limit of his requirements means extra appliances must be installed if increased consumption is to result.
(5) The increased consumption of 15% by the slot meter consumers is more encouraging, and this shows the lower commodity charge will eventually lead to increased consumption.

(6) Unless the consumers obtain additional appliances, in many cases the two-part tariff will not lead to large increases in consumption.
(7) We are now preparing alternative schemes whereby consumers may obtain these appliances, and the hire-charge will be included in the fixed charge portion of the two-part tariff, with the charge modified to suit.
(8) It appears that in certain homes where the average wage earned is very low, the consumer will be inclined to take advantage of his immediate savings to spend in other directions rather than increase the quantity of gas consumed.
(9) At Port Talbot efforts will steadily be made to develop the two-part tariff, and the experience we have gained will be extremely useful in formulating our methods of dealing with the problem.
(10) Those undertakings which are in a position to release revenue are those to whom the two-part tariff will appeal most.
(11) The displacement of solid fuel is one of the real tasks facing the Industry, and it is only by means of suitable competitive tariffs that considerable progress in this direction can be made.

Although our gas sales showed an increase of 7·4% for the financial year recently ended, I realize that electrical competition is becoming more intense, and only by pursuing new avenues of development can we ensure future progress.

There are innumerable points arising from the subject matter of this Paper, but time will not permit of their development. The main purpose is to place before you certain of our methods, in order that it may give rise to an exchange of information I have always found the members of the Wales and Monmouthshire Association so willing to provide.

Discussion.

Opening the discussion, the PRESIDENT (Mr. J. Stephenson, Aberdare) asked the Author what percentage of the revenue from the sales of gas was represented by the £2,000 lost on the introduction of the two-part tariff.

Mr. H. D. MADDEN (Cardiff) said he well remembered the excellent impression Mr. Edwards created when twelve years ago he came before the Board of Examiners, of which he (Mr. Madden) was then Chairman. He was very struck by Mr. Edwards' answers, which were extremely lucid; there was no beating about the bush in the oral examination, and that part of his character was apparent in his Paper that day. He hoped that Mr. Edwards' contribution would not be discussed and finished with there and then. The Association should call a meeting of the Special Purposes Committee and get down to the facts of that valuable Paper. On the question of unaccounted-for gas, he considered that Mr. Edwards was dealing with the matter in the correct manner and if he persisted in his present methods he would soon get below the 5% so far attained. While on this question, he made the suggestion that when roads were opened up barring should be carried out to the left and right. The adoption of this method at Cardiff had led to the discovery of joints that were leaking. Regarding hire-purchase, they had received intimation from the National Gas Council of the recent Bill and found that they were not materially affected. Many of the members had already received copies of the Gas Light and Coke Company's agreement form. It was very gratifying to hear that Mr. Edwards was making a fight for the lighting load. He was certain that they could get back the lighting of the living rooms in smaller houses, where the gas burner was used for heating as well as lighting.

Mr. W. CLARK JACKSON (Neath), as one responsible for Mr. Edwards' career in its initial stages, said that it was a great pleasure to see him reading a Paper, which received such wholehearted approval from those present. He thought so highly of him as a young man that he sent for his father and presuaded him to article Mr. Edwards in the Gas Industry. The Industry had gained by that step, and it was now his turn to get some advice from Mr. Edwards. He thought it a was a fine thing for the young men of the Industry to take the plunge as far as tariffs were concerned. Regarding the testing of meters, he recalled that when he was with Anderson Brothers, in the South of Ireland, it was the custom to paint meters distinctive colours for each year of seven-year periods to assist in checking registration. At Neath every meter registering a reduction of 15% or more compared with the corresponding period of the previous year was tested. The Author, he thought, was on the right lines with his selling schemes; at Neath they had used the rebate system and found it very successful. He commented on the wonderful increase in the turnover at Port Talbot, which was all the more creditable when one considered that it was due not to industrial but domestic loads. As one who had employed women for maintenance work since 1919, he was glad to see the practice followed at Port Talbot; women were capable of making contacts that would otherwise be lost. Tariffs could only be introduced where there was surplus revenue to be disposed of, and such conditions rarely obtained at the present moment owing to the high cost of coal and other materials. But there might be a turn in the tide as far as the coal position was concerned, and he had decided, when that time came, he certainly would not have a flat-rate reduction. It would see the adoption of either a two-part tariff or a block rate.

Mr. W. T. KENSHOLE (Merthyr Tydfil) had one criticism to offer, and that related to the title of the Paper. He felt it would have been better called "Something Attempted, Something Done," for the results set out in the Paper were definitely outstanding. It gave one furiously to think of what might be effected in one's own undertaking. He had found that the testing of meters at set periods, quite apart from the benefits it conferred on the undertaking in the reduction of unaccounted-for gas, did reduce the number of disputed accounts. All meters at Merthyr were tested within five-year periods. He wanted to know if any hire-purchase form were signed for the weekly payment scheme, and, if so, what system of maintenance was adopted. Were replacements charged or carried out free? The Author had taken a very bold step and had shown that in formulating a tariff an object was to conserve existing business, and he did not think too much stress could be laid on the fact that in seeking new business they had to conserve that already existing.

Mr. W. M. Fox (London) commented on the apparent discrepancy between the percentage increases in gas sales and number of consumers and that for the appliances sold. He thought the increase in the case of appliances very high in comparison with the other two increases. Was this due to the replacement of existing appliances or the installation of new?

Mr. J. ROUNDS (Bilston) wished to know what additional time was involved in collecting from the special boxes attached to the meters for the weekly payment scheme.

Mr. W. H. JOHNS (Swansea) said that as a neighbour he had watched with considerable interest the good work Mr. Edwards was doing for the Port Talbot Corporation. He thought Mr. Madden's suggestion for the further discussion of the Paper at a Special Purposes Committee meeting very excellent. Regarding the extra cost of collecting from the special boxes, he pointed out that it was rather a matter of time than of cost. He wanted to know more about the time-tariff controller mentioned in the Paper and he wondered if Mr. Edwards was fully satisfied with the expense involved in fixing it. Regarding the new Hire-Purchase Bill, he was of the opinion that a common form would help; they had seen the Gas Light and Coke Company's form, and, though very admirable, it might not fit conditions in South Wales. It was important to start a two-part tariff only when there was surplus revenue available and one had to wait for that moment before embarking on a scheme. What they wanted to tackle in the Gas Industry was the consumer who used less than 10,000 cu.ft. per annum, and Mr. Edwards was on the right lines for achieving that.

The PRESIDENT here asked for the approval of the members to Mr. Madden's suggestion, which he personally thought a very proper one, that the Paper be further discussed by the Special Purposes Committee. The proposition was unanimously adopted.

The Author's Reply.

In the course of his reply, Mr. EDWARDS informed the President that the total revenue at the time the tariff was introduced was £36,000. Mr. Madden's suggestion that barring should be carried out to the left and right when roads had been opened up was a very excellent one. He also remembered his appearance before the Board of Examiners and their kindness to him had been a source of real encouragement. It gave him great pleasure to see Mr. Jackson at the meeting. It was twenty-one years since he had been at Neath and he was very appreciative of Mr. Jackson's kindness to him there. Regarding canvassing, it was interesting to note that he had found that the best canvassers were non-technical men. The women canvassers at Port Talbot more than paid for themselves from the profits of the appliances they sold. In reply to Mr. Kenshole he said that the hire-purchase form was signed for the weekly payment scheme and was identical to the quarterly form except that it was made out for weekly payments. In reply to Mr. Fox's question, he said he was unable to give full details but with their rebate cooker scheme the new business was 64% and the remainder was the replacement of old black cookers. Regarding the additional time involved in the collection from the special boxes attached to the meters for the weekly payment scheme, the Author said this amounted to between 8 and 10%, but they had to be prepared to devote more time to their service if they were to retain business. In council houses, the collections from meters were carried out by the rent collectors: this was possible since they were a Municipal Undertaking. Replying to Mr. Johns, he pointed out that the time-tariff controller was very expensive and they had only about thirty in use. His Undertaking charged an additional five shillings on the accounts where they had had to install these.

PRELIMINARY WORK OF Reconstruction and Extension at Rochdale

by
R. J. BRADSHAW,
Assistant Engineer and Manager, Rochdale Corporation Gas Department

From a Paper before the Manchester and District Junior Gas Association, May 7, 1938.

Prior to 1937 the whole of our carbonizing plant and main steam generating plant were nearing the end of their usual life, and their early renewal presented the opportunity of modernizing these two main sections of the works. The carbonizing plant consisted of two retort benches in separate houses, drawing coal supplies from a covered coal store of 5,000 tons capacity, and the foul mains of both benches joined to form a common stream of gas on the inlet to the condensers.

A short description of the above plant is as follows:

(1) A Glover-West bench of 24 3½-ton retorts with a daily output of 1,150,000 cu.ft. of 475 B.Th.U. gas.
(2) A Woodall-Duckham bench of 16 7-ton retorts, downwardly heated, with built-in producers and recuperators, with a daily output of 1,800,000 cu.ft. of 475 B.Th.U. gas, provided with a waste heat boiler to handle waste gases of 9% CO_2 content and an average temperature of about 600° C.

No provision was made for metering the gas output from either setting or for weighing coal elevated to bunkers. Figures for coal carbonized on both benches were obtained by measurement of the main coal store. This method, even on monthly returns, was most unreliable, because all coal entering the works for carbonizing had to pass through this store of 5,000 tons capacity. A variation of 1 in. in the level of the coal in the store resulted in a measurement error of 12 tons, also the basins and cones formed by the transit of coal through the store caused greater errors, and it was unpractical, even at monthly intervals, to have this store levelled for stock-taking purposes.

From the above it will readily be seen that we were unable to obtain the necessary data for the efficient and economical operation of our carbonizing plant. To alleviate the position temporarily, and without going to heavy expenditure, the layout of the smaller retort bench permitted the installation of an automatic weighing machine, after which coal stock measurements were only necessary on a coal store to the larger retort bench, which store has a capacity of 1,000 tons only. This automatic weigher has functioned perfectly over a working period of two years; moreover, on examination prior to its removal to a position on the new retort bench no replacements were found necessary.

We have in addition to the carbonizing plant a manually-operated carburetted water gas plant with a daily output of 1½ million cu.ft. of 475 B.Th.U. gas. This, although well maintained, is of an old pattern, requiring heavy expenditure to modernize and cheapen production. Moreover, we have a good coke market, due to good grading and debreezing, which places carburetted water gas manufacturing costs on unfavourable terms when compared with those of coal gas manufacture.

The steam generating plant consisted of three units as follows:

(1) The main range of three 28 ft. by 7 ft. 6 in. Lancashire boilers, two of which were fitted with coke breeze burning grates.
(2) One waste heat boiler attached to the Woodall-Duckham plant, to generate 4,000 lb. of steam per hour at 120 lb. per sq.in.
(3) A range of two 30 ft. by 8 ft. Lancashire boilers attached to the C.W.G. plant, to work at a pressure of 155 lb. per sq.in., also capable of breeze burning.

All three units were connected to the works steam range and evaporated untreated water of a hardness varying from 5° to 10°, most of which is permanent. The main unit of three Lancashire boilers was limited to a pressure of 60 lb. per sq.in. due to corrosion and age, and the adjoining steam range consisted of unfaced rubber-jointed cast iron pipes. Moreover, these boilers were situated 160 yd. from the point of maximum steam requirements, and no superheaters were fitted. Excessive condensation took place, and leakages were frequent.

For reconstruction purposes the layout of the works presented two possible schemes for consideration. The winter season town gas load reaches 2,300,000 cu.ft. daily (average for week's delivery), and the summer load 1,500,000 cu.ft. per day. To deal with this load we had the Glover-West bench with an output of 1,150,000 cu.ft., and the Woodall-Duckham bench of 1,800,000 cu.ft. capacity, making a total of 2,950,000 cu.ft. per day. The load factor when using both benches to handle the winter load and the Woodall-Duckham bench to handle the summer load, was well balanced, giving a 28% and a 20% margin of capacity over requirements respectively, and we had independent plants in case of breakdown, &c.

The first scheme to be considered was to reconstruct both benches, to incorporate coal weighing machines, together with the provision of separate gas streams up to and including the station meters, and the installation of new steam raising plant.

The second scheme was to dismantle the larger bench and rebuild a carbonizing plant capable of taking the winter load, with provision for an early 25% extension and a further extension of 25%, and incorporate coal weighing and handling plant, and likewise as in the first scheme, erect new steam raising plant.

The Scheme Adopted.

The second scheme was adopted, the details of the work actually carried out being briefly as follows.

The reconstruction of the larger setting was carried out in its existing house by the Woodall-Duckham Company, and the new plant consists of 24 of their latest pattern upwardly heated retorts capable of producing 2,850,000 cu.ft. per day of 475 B.Th.U. gas. Provision was left for an early 25% extension, and a further extension of 25%. Additional coal handling plant was installed, enabling deliveries of slack, nuts, or large coal to be elevated direct to bunkers and weighed before discharging, *en route* if desired. A breaker was provided for crushing lump coal. An additional waste heat boiler complete with superheater was installed, and the existing boiler was reconditioned and re-erected, with superheater, in a new position. Each boiler is now capable of handling all the waste heat from the new setting, and when so doing produces 8,600 lb. of steam per hour at 120 lb. per sq.in. and 100° F. superheat. A producer gas augmentation flue was provided so that the steam output can be raised to 14,000 lb. of steam per hour with both boilers in operation. The position of the boilers has been arranged approximately midway between the retort bench and the wet purification plants in an effort to shorten the steam ranges. These latter have been renewed with screwed and expanded flanged steel pipes, thoroughly well lagged and drained. In a further effort to cut down steam losses electric drives are being adopted wherever practicable, taking into consideration the available life of the existing steam engines and the size of our electrical generating plant. In conjunction with the waste heat boilers a base-exchange water softener with chemical conditioning and sulphite oxygen removal gear has been incorporated, and the C.W.G. Lancashire boilers have

been linked up to the main steam range to act as stand-by plant.

Time is a vital factor in all reconstruction and extension work. Moreover, the stages are interlocked and the sequence cannot be shortened to any great extent, but if a scheme is to fulfil the ideas in mind at the time of its conception and repay the expenditure entailed, then the more time available for consideration of the details of the design and for discussion of the project, the better are the chances of successful achievement.

With normal working some two months will be spent on the preliminary details of the design, specification, and estimate of approximate cost. A further two months will probably elapse before we reach the stage where the Council has approved the scheme, and we set out to secure firm tenders.

In the case of an extension, however, it may be necessary to apply for a Provisional Order or Special Order to purchase land or extend the area of scheduled land. Further, it may be necessary to apply for powers to raise Loan money and this may result in an inspection and/or a public enquiry by the Ministry of Health before sanction is received. Provided everything is in order, a further two to three months may elapse, giving a total of at least six months. This can be taken as the least time which should be allowed for preparation.

Works reconstruction can be divided into two sections: (*a*) Reconstruction to replace worn-out plant; (*b*) Reconstruction to secure more economical working.

In case (*a*), payment is generally provided for by setting aside each year from the time the plant was installed a portion of the Department's profits, which should mature to the original cost by the time the plant has worn out, and commonly referred to as a Renewals Fund or Reserve Fund. This fund is at the disposal of the gas undertaking within wide limits, but its magnitude is controlled generally by a local Act with a view to preventing excessive profits and consequently reserves, at the expense of dear gas to the consumer. As an example, Rochdale was granted powers by a local Act of 1925, known as the Rochdale Corporation Act, 1925, for the Gas Undertaking to build up a Reserve Fund which should not exceed at any time one-tenth of the aggregate capital expended, and can be applied to meet the following charges: (1) Any deficiency in income; (2) any extraordinary claim; (3) any cost of renewing the works; (4) any cost of extension of the works.

It will be seen from the above that provided this Fund can meet the cost of a reconstruction or extension scheme, the approval will be a simple matter, as it is purely one of domestic finance and can be got through the routine stages with speed. It is questionable whether this Reserve Fund is adequate, and whether its limitation really secures the object of the Act—viz., to prevent the exploitation of the gas consumer. It is noteworthy that our Electricity Undertaking is permitted to accumulate a Reserve Fund up to one-fifth of the capital employed, and the reason for the difference is, to say the least, not apparent.

In reconstruction involving the installation of new plant (generally to secure more economical working) a far different set of conditions prevails. In the first place, the necessity for reconstruction is more open to debate by the undertaking's ruling committees and council, particularly as it is unlikely that the renewals fund will meet the estimated expenditure, necessitating an application to the Ministry of Health for permission to raise a loan. In any case, extensions to plant cannot generally be financed out of the Reserve Fund. Applications for loans invariably delay a scheme, as a contract can only be provisionally entered into by the Corporation before sanction to raise the loan has been granted, because contractors cannot be expected to take the risk of putting work in hand on receipt of notice that their tenders have been accepted by the Council subject to the approval of the Ministry of Health. On occasions the Ministry has called for fresh tenders, and has also condemned sites, the latter case being due chiefly to public objection, such as nuisance, water rights, bad foundations, &c.

It might be of interest at this stage briefly to review the method of applying for a loan required for the reconstruction and extension of, say, a carbonizing plant. Presuming the Council has approved the scheme, the Ministry of Health is notified by the Town Clerk that an application is to be made, whereupon the Ministry of Health requests the Town Clerk to supply the following particulars:

(*a*) A certificate of the Council's resolution.
(*b*) A report by the Gas Engineer on the necessity for the scheme.
(*c*) Drawings and specifications of the proposed scheme.
(*d*) Particulars of outstanding debts on any work to be superseded.

As we are chiefly concerned with the engineer's report, which, if carefully prepared, can be responsible for a considerable saving of time by preventing further requests by the Ministry of Health for additional information, it is advisable to supply the following details:

(1) A description of all existing gas-producing plant, stating age, capacity, costs, and how these costs were defrayed, also details of any major repairs or reconstructions and their attendant costs and source of payment.
(2) A description of the present condition of the plant.
(3) Gas output requirements and nature of load.
(4) Size of plant required to meet this load, including holder capacity.
(5) Consideration of proposed scheme and alternatives, with costs.
(6) Site of proposed extension, and if on scheduled land.
(7) A list of the firms who have tendered, with costs, stating the tender it is proposed to accept if the loan application be granted.
(8) A description with drawings and specifications of the work covered by the tenders, and work covered by the Gas Department.
(9) Financial considerations, (*a*) the balance-sheet and accounts of the undertaking, (*b*) amount and period of loan applied for and suggested method of repayment, (*c*) running costs, savings, and advantages expected.

The Ministry of Health is at liberty under the Gas and Water Facilities Acts of 1870 and 1873 to call for a public enquiry, giving the Town Clerk at least ten days' notice. The Enquiry is generally opened by the Town Clerk presenting details of the powers sought in the application, followed by the gas engineer with a summary of his original report to the Ministry, and the borough treasurer who describes the proposed method of financing the scheme, after which the public are at liberty to voice their objections or ask questions. The main burden of supplying information to the Inspector falls upon the gas engineer, and he may be required to answer questions on widely varying aspects of the case, both technical and financial. On the conclusion of the Enquiry, which may necessitate a site inspection, a period of a month or more usually elapses before the Ministry approve.

On receipt of sanction from the Ministry of Health to the raising of the necessary loan, an Agreement is drawn up by the Town Clerk between the Contractor and the Corporation to safeguard the Corporation. Standard clauses are approved and recommended for adoption by The Institution of Gas Engineers and the Society of British Gas Industries, and these are published by the Institution for the use of its members.

In this agreement are embodied the specifications and drawings of the Gas Committee and the Contractor, together with all correspondence which may have passed between the Corporation and the Contractor on the subject of the contract after receipt of the tender.

From the above I think you will agree that the completion of the arrangements in six months will be an accomplishment of rare occurrence—where the purchase of land is invoived this can easily extend to two or more years.

Discussion.

Mr. ALBINSON remarked that it was important that they should know the correct procedure to adopt in cases where reconstruction had to take place and it was necessary to borrow money for that purpose.

Mr. HASLAM (Bolton) enquired if the respective contributions that could be made by the Gas and Electricity Departments to the Reserve Fund were defined by one Act.

Mr. BRADSHAW replied that the Electricity Department was given one-fifth of their capital because it was regarded as a newer industry, and required more capital for rapid extension. It would be a definite advantage for the Reserve Fund of the Gas Depart-

ment to accumulate to one-fifth of the capital, as in the case of their competitor, so that money would be available instead of it being necessary to seek powers to borrow.

Mr. BENNETT (Mossley) stated that there was no mention in the Paper of a Sinking Fund for the repayment of loans. He presumed, however, that in addition to a Reserve Fund they also had a Sinking Fund so that when the plant had come to the end of its estimated life there would be an accumulated sum in the Reserve Fund that would pay for the replacement of the asset. The Reserve Fund was intended to meet any extraordinary expenditure, and he was of the opinion that it should not be appropriated without the consent of the Board of Trade.

Mr. BRADSHAW replied that there was a Sinking Fund in existence as well as a Renewals Fund.

Mr. C. H. BAMBER supplemented this reply by stating that in addition to the Sinking Fund there was a Reserve Fund, which could go up to 5%, and the Gas Committee had passed a resolution to contribute a fixed amount every year for the purposes of renewals. This constituted an earmarked section of the Reserve Fund, as Rochdale had no power, under their Acts, to have a separate Renewals Fund. The money set aside for renewals could not be used to make good a deficiency in income, but the other portion of the Reserve Fund could be used for that purpose.

Mr. BENNETT pointed out that it would be in the power of the Council to rescind their previous resolution relating to the renewals portion of the Fund, with which Mr. BAMBER agreed.

Mr. HEALD (Preston) warned members against having too much loan capital.

Mr. BLAKE (Blackpool) enquired whether the flues suffered any deterioration through contraction and collapse of the lining, when the producer was shut down. He was pleased to observe that they screened the coke at the right place—namely, immediately before going into the bags.

Mr. BRADSHAW replied that there had been no evidence of cracking. When the producers were being built, it was thought that there was not sufficient brickwork, but brickwork could react in two ways. The more bricks that were put in, the less elasticity there would be. He was of the opinion that if the brickwork was of sufficient thickness to provide for insulation and wear, then the thinner the walls the better life you could obtain from them.

Mr. J. T. HAYNES stated that the discussion showed clearly the necessity for Juniors to study financial problems and also Parliamentary procedure. The Gas Industry had an Education Scheme and it was essential that this matter should receive the attention of the Education Committees.

A vote of thanks for the Paper was proposed by Mr. J. A. SPEERS (Preston) and seconded by Mr. W. HODKINSON (United Kingdom Gas Corporation).

WALES AND MONMOUTHSHIRE ASSOCIATION

Presidential Address

OF

J. STEPHENSON,

Engineer and Manager of the Aberdare and Aberaman Consumers' Gas Company

Presented at the Annual General Meeting of the Association held at Aberdare on May 19.

J. STEPHENSON (Aberdare).

I am deeply conscious of the honour you have done me in electing me President of this important Association. In looking back over the transactions of the Association I feel that the word "important" is justified. On considering the list of former Presidents I was filled with foreboding, but am somewhat comforted by the fact that many expressed the difficulty with which I am now faced in finding material for a Presidential Address. The fortunate few who had recently completed new work were able to solve the difficulty with ease and with interest to their hearers. In looking through old copies of the transactions I found that in 1909 the President, Mr. Thomas Ackland, of Llanelly, said "There is only one way of judging the future, and that is by the past;" and I felt I should be interested to see how the happenings of past days had stood the test of time.

In 1906, Mr. J. H. Canning read a Paper written by his father who was absent. The title was "The Durability and illuminating Value of the Incandescent Mantle." Mr. Thomas Canning stressed the importance of research, saying that the development of the mantle required the use of intelligence and science and that we had not yet arrived at the best way of developing it.

I am not going to say, in view of the extreme importance of the matter, that research has been prosecuted as vigorously as it ought to have been, but it is significant that a responsible authority is investigating at the moment a new type of mantle which is stated to give a greatly increased lighting efficiency.

In the same year it was stated that the Gas Workers' Union had imposed on a few gas-works, of which Neath was one, an eight-hour day. In connexion with a change of carbonizing system which had been estimated to effect certain economies, it was said that "Man proposes and the Gas Workers' Union disposes." There are few to-day who would uphold a working day of 12 hours, and the Joint Industrial Councils are an undoubted advance on the individual methods of former days both for employers and employed.

Developing the Use of Tar.

In 1907 a Paper was read on "A Dust-Preventer for Public Roads," and in the course of the discussion Mr. Madden described experiments which had come under his notice where, after the road had been well brushed, tar which contained only about 5% water was sprinkled on the roads from a water cart. He supposed the tar sank 2 in., but it kept the road clear of dust for about two months. What a tremendous amount of work has been done since that time. It is gratifying to know that intensive research and endeavour, aided by the formation of the British Road Tar Association, has resulted in the ability to ensure, by the use of our by-product, tar, those long wearing, dust-free, non-skid roads to which we have become accustomed. The slogan "British Tar for British Roads" should commend itself to all.

In 1908, Mr. Ackland tells of opening showrooms in Llanelly two years earlier with satisfactory results to consumers and Company. It is interesting to note that the Llanelly Gas Company have this year opened magnificent new showrooms. Mr. Ackland said: "It is encouraging to

find that manufacturers continue to improve their designs in gas fittings, burners, lamps, cookers, and fires, at the same time increasing the effectiveness and economy of lighting, heating, and cooking by gas." This is very true at the present day. We may all grumble at times, but undoubtedly modern lighting fittings represent a great advance with attractive gleaming and colourful fittings, switches, and bowls, while the beautiful examples of modern fires and cookers effect an economy in gas consumption of which most of us have become aware when consumers have changed to these from older types. Although we may deplore the drop in consumption resulting from these changes, there is no doubt that the more economical the appliances we supply the sounder will be the basis of our business.

In 1909, Mr. Ackland said there was every probability of the time approaching in the near future when Parliament would altogether do away with the illuminating test and would make it a statutory obligation on the part of all gas companies to adopt the calorific test in the same way as the Gas Light and Coke Company had then for the first time been compelled to do.

Most of us remember the doubts which assailed us as to the best declarations to make under the Gas Regulation Act eleven years later. I suppose that this legislation would have been introduced earlier if the war had not intervened.

In 1910, we find Mr. Madden reading a Paper on "A Need of the Gas Industry in South Wales" and drawing attention to the fact that no public tuition was available in South Wales for those who desired instruction and technical training in the subjects of gas engineering and gas supply. The Gas Industry in South Wales has been fortunate in having men who, having realized a need, have left no stone unturned until that need has been met. We all know the facilities which have been made available to the young men in our Industry and the encouragement which this Association has given to students by awarding prizes to all those who pass their examinations. Let us give credit where credit is due. I have no doubt that the pioneering work and steady persistence of the reader of the Paper in 1910, who is still so keenly interested in educational work, has largely influenced the Association in the matter.

Mr. Franklin, of Barry, in his Presidential Address in 1913 said: "At the present moment, when the price of coal stands at so high a figure, the question of carbonization is of great importance to all gas engineers and managers, as the old saying that dividends are made or lost in the retort house may still be taken as a truism." I have looked up the price which my Company paid for coal in that year and find that the average was 11s. 10d. per ton delivered. The present price of my cheapest coal is more than double this figure, and consequently the question of carbonization assumes even greater importance in these days, and there is ample work for the Special Purposes Section of the Association and the District Executive Board of the National Gas Council in endeavouring to safeguard the interests of the members in coal matters.

The War Years.

At the time of the May meeting in 1914 there was no premonition of the calamity which was to befall Europe in August of that year. At that meeting an innovation was made, two Papers being read by assistants—namely, "Some Notes on Wet Purification," by Mr. E. H. Clarry, assistant at Cardiff, and another by Mr. W. Clark Jackson, then assistant at Merthyr Tydfil. It is interesting to note that Mr. Jackson's Paper was entitled "A Few Notes on Gas Sales," and he was at that time urging the necessity of servicing appliances. Mr. Jackson quoted from a slip sent out by a large firm to their branch shops—"Give good service at the cheapest cost to your customer," and he advised—"Go thou and do likewise." Advice which Mr. Jackson has consistently followed up himself and which he has developed with such great advantage in the Undertaking which he now controls.

In 1915, Mr. A. W. Branson, of West Hartlepool, was elected President, and in these days when Air Raid Precautions are being considered, and when in the event of war inland works will be as vulnerable as coastal works, I suggest that Mr. Branson's description of the effects of shell on his gasholders is worth turning up.

In 1916, we find Mr. Canning emphasizing the need for gas undertakings increasing the production of benzole to limit our dependence on foreign petrol; and in the following year Mr. Jackson read a Paper on "Coal Gas—a Substitute for Petrol on Commercial Lorries," describing methods of achieving this both by the cumbersome flexible containers which became fairly common and by steel receivers the weight of which limited their use. It is interesting to note that Mr. R. A. Browning, in his Address in 1906, gave details of costs of running cars by coal gas on their tramway system at Neath, and the cost with gas at 3s. per 1,000 cu.ft., including compression and lighting of cars and depôt, was 1·8d. per car-mile. It is difficult to contemplate the dislocation of business which would ensue in these days of dependence on road traffic in the event of an acute shortage of petrol, and every effort should be made to perfect arrangements for substituting coal gas.

In October, 1918, Mr. (now Sir Reginald) Clarry became President, and at the outset expressed the hope, which appeared likely of attainment, that the war would terminate during his year of office. In his Presidential Address he summarized the very valuable contributions made by Gas Undertakings to the services of the country during war time. I need not recapitulate these; very many of us remember the tremendous amount of organization required and the efforts put forth to assist the Minister of Munitions. I hope that this is being borne in mind by the powers that be, and that a government which considers it necessary to prepare for war in the hopes of preventing war will extend its sympathy and help to ensure the continued prosperity of our Industry which can make such a vital difference in time of need.

The foregoing has, I am afraid, been a very sketchy *résumé* of the early affairs of the Association, and the end of the war being a very definite landmark in history I do not intend to enter the post-war period in the same way. In concluding this portion of my remarks, I do not think I can do better than recall the last words of Lord Moulton's Presidential Address to The Institution of Gas Engineers in 1919. He said: "My view of the Gas Industry is—it could wish for no better test—that its value to the country is incalculable. This is recognized at the present time; and it will continue to be so recognized. And the Industry will maintain its high position in social and industrial usefulness if it realizes that the exceptional conditions under which it exists make it more, and not less, incumbent on it to adopt the best means for performing its important duties. By so doing it will not only render its future secure, but it will merit and win the gratitude of the country."

I submit that more intensive research is being carried out at present in our Industry than ever in the past, as witness the necessity for holding Annual Research Meetings of the Institution in autumn, and is so doing its utmost to merit that gratitude which Parliament has been very loth to extend in any tangible form.

Recent Events.

And now a very few remarks on more recent events. Legislation appears in some directions to have weighed rather heavily on gas undertakings. I need not dwell on the coal position, which has resulted in prices being increased beyond reason to public utility undertakings, who have been denied what they consider adequate safeguards. The Industry generally and those undertakings in colliery districts particularly are desirous of seeing the miner amply recompensed in his hazardous calling, and they voluntarily submitted to an increase of 1s. per ton on existing contracts in January, 1936, for this purpose. But one fails to see any increase in miners' wages proportionate to the additional prices now charged.

The new Factory Act has added further responsibilities and expense not only to ourselves but to almost all who come under this Act. The Gas Industry, however, is in a position to help many in conforming to the requirements of the new Act regarding the heating of factories, the provision of hot water, &c., for which gas is the best agent.

Holding Companies.

I think in the circumstances I ought to say something about Holding Companies. These are a comparatively new development in the Gas Industry, and it is true to say that

they were at first looked upon with a certain amount of distrust; there was a feeling that the Industry was to be subjugated to "high finance," possibly to its detriment. As time has passed we have been able to obtain a clearer view, and it has become obvious that the enormous amount of capital entailed in the purchase of numbers of gas undertakings must be safeguarded by the careful nursing and control of those undertakings and by their development. The constitution of the new Boards of Directors of the acquired undertakings is strengthened, and the officials of small undertakings have the unique advantage of having on their Boards men whose names are household words in the Gas Industry and who are universally recognized as among its most capable administrators and others equally well known as experts in financial and legal matters. The purely local aspects of a company's work are not overlooked, and reliance is placed on the local Directors and officials in regard to this, so that a well-balanced control is assured.

In addition, there is available a staff of technical experts which brings within the reach of constituent companies assistance which could only be possible in the very largest concerns. Thus help in engineering matters from the drawing office forward, the testing of materials in a central laboratory, assistance in respect of all kinds of problems arising in connexion with the use of gas for industrial purposes, and expert help and advice in all matters affecting sales and publicity are available to the smallest member as well as to the largest. In fact, the function of this Central Administration may be considered to be initiating, supporting, and fostering constructive effort.

The development of the team spirit among the constituent companies and a pride in being part and parcel of an efficient organization will undoubtedly consolidate a position which in a comparatively short time has been won.

The Sheffield Gas Bill

Consideration of the Sheffield Gas Company's Bill was commenced on Monday, May 16, by the Committee of the House of Lords which dealt during the previous week with the West Yorkshire Gas Distribution Bill.

(*Concluded from last week's* "JOURNAL.")

Wednesday, May 18.

In the course of further cross-examination by Mr. Trustram Eve, Mr. Halkett said the Company had always had in mind that, if the grid worked successfully, the natural extension of the coke oven gas limits would be asked for.

Questions were put as to where Rotherham was to find natural extensions of its coke oven gas limits if it were to be surrounded by the coke oven gas limits of the Sheffield Gas Company; and witness was asked whether it was in the interests of the public that two public gas undertakings should compete for supplies in the same area. Witness replied that in the circumstances it was. The Sheffield Company, having operated the grid so successfully, should have an extension of its coke oven gas limits.

COUNSEL referred to one particular industrial undertaking which had sold coke oven gas to Rotherham. That undertaking could legally have sold to the Sheffield Gas Company at 5½d. per 1,000 cu.ft., and Rotherham could legally have bought from the Gas Company at 6d. In fact, however, Rotherham had bought the gas from the undertaking in question at 5¾d. He asked if it could be in the interests of industrial consumers of gas that two statutory undertakers should compete with each other for supplies, and so artificially raise prices.

Witness replied that he saw no objection in the circumstances. The Company was bound to buy at 5½d. (subject to the operation of the coal clause), and Rotherham was buying economically at 5¾d. There was a figure beyond which he would not advise the Company to go when purchasing gas into the grid. Rotherham was in a better position because it had taken advantage of the grid all the way through.

COUNSEL ascertained that the extent of the area it was proposed to add to the coke oven gas limits of the Sheffield Gas Company was 397 square miles, and said that the Company asked Parliament for that area, knowing that Rotherham would be short of coke oven gas by 1941.

Witness pointed out that he was not asking for sole rights in that area; Rotherham could compete for the gas there.

COUNSEL asked if the Company would be prepared to reserve to Rotherham an area to the east of Rotherham of sufficient size to meet its reasonable future requirements, and to exclude that area from the Company's limits; or, alternatively, to grant to Rotherham a greater share of the gas in its own area.

Witness replied that he would not be prepared to do that. He did not consider that Rotherham, having regard to its past history, required any reservation. It had the right to buy quantities of gas which would be sufficient for the next two or three years. There was room for both as buyers in the area.

COUNSEL, discussing the proposed supply of about 2 million cu.ft. per day by the Sheffield Company to Doncaster, which (if the Bill passed) would be provided in June, 1939, unless otherwise agreed, said that the Sheffield Company would have to lay 13 miles of 12-in. main, costing £40,000; and the supply must obviously come from the Company's present limits, with the possible addition of the Harworth collieries.

Witness said he hoped to obtain the 2 million cu.ft. per day from Harworth.

COUNSEL suggested that the Company had never received any encouragement with regard to supplies from Harworth, or, if it had, that encouragement had at the moment turned to strong discouragement.

Witness did not agree with either contention. He said that the sale price to Doncaster was 8d. per 1,000 cu.ft., but would not agree that it was a particularly profitable venture.

Dealing with a suggestion that, because of that supply to Doncaster, Rotherham must go short, he said that Rotherham was not short; if it had a supply for three years ahead, it was very well provided for.

Mr. W. CRAIG HENDERSON, cross-examining on behalf of coke oven owners in the Company's proposed new area in Notts and Derby, secured agreement that if the Company obtained coke oven gas from the Notts area, that gas would go to Doncaster, which was not within the Company's area of supply. He asked if there was anything which would guarantee to the Company 2 million or anything up to 2 million cu.ft. per day in the added area, or whether the Company could say that by June, 1939, it would obtain any coke oven gas at all from any part of that area.

Witness replied that he would endeavour to negotiate with Harworth colliery.

COUNSEL asked if he were trusting to securing coke oven gas from Harworth with which to fulfil the Doncaster contract.

Witness replied that he was at present. If he could not negotiate a contract with Harworth, he would have to make the gas in the meantime, until more coke oven gas became avilable.

COUNSEL asked if it were considered economic to manufacture gas in Sheffield at a cost of about 1s. 9d. per 1,000 cut.ft. and to sell it to Doncaster at 8d.

Witness replied that he would naturally take what was available in the grid at any time for the purpose of that supply, and he would have to make the remainder. He would not agree that the gas manufactured for the purpose of that supply would cost 1s. 9d. per 1,000 cu.ft.; the load would be steady and the gas could be made at about half the usual cost.

Questioned with regard to the fact that the Sheffield Gas Order of 1936 authorized the Company to take coke oven gas from the owners of three coke ovens in Derbyshire, he agreed that he had not been able to negotiate contracts with any of them, for the prices asked were prohibitive.

COUNSEL said he presumed that they were not willing to sell at 5½d. or to become members of the Gas Grid Company.

Witness replied that 5½d. was never mentioned. He was prepared to pay the same price as that at which the suppliers were selling to others; but they had asked him for 50% more.

COUNSEL pointed out that in the Derbyshire area referred to, the Company had the right to buy coke oven gas, but not to sell it there, for it was not within the Company's coke oven limits. On the other hand, the Company sought by the Bill to buy and to sell coke oven gas in parts of Notts and Derbyshire, and he asked if the Company would be content to limit the Bill to buying in those areas, so that it would not compete with coke oven owners.

Witness did not think it was reasonable to ask this. He said it might be of service to gas undertakers there if the Company was able to sell to them. The Company would not be able to sell to other than gas undertakers without the consent of the undertakers in any area in which the gas was sold.

Cross-examined by Mr. JACQUES ABADY (for the United Steel Companies) with regard to the inclusion of Orgreave in the Gas

Company's ordinary area of supply, *Witness* said the fact that the Company was not taking gas from the Orgreave coke ovens at the moment was not a matter of grievance; the relations between the Company and the United Steel Companies were of the best. He agreed that United Steel would not be in so free a position as it was to-day with regard to supplying coke oven gas if the Company included Orgreave in its area, because the Gas Company would then be able to compete with United Steel.

Replying to Mr. TRISTRAM BERESFORD, he agreed that he had not made enquiries with regard to the production of coke oven gas at the collieries in Notts.

It was urged by Counsel that the Company would be an unnecessary middleman between coke oven owners and buyers of coke oven gas in Notts, and would charge to the buyers a price higher than that which they would pay if they bought direct from the coke ovens.

Winess said he did not think the Company could be regarded as a middleman. It would have to sell, of course, at a price which would cover the cost of the mains, *plus* profit. However, the powers in the Bill were sought with the object of securing supplies of gas for use in Sheffield, but it would be unfair to take it from outside areas without giving the gas undertakers in those areas the opportunity to use it.

Asked what benefits Notts would derive from the invasion of its territory by the Sheffield Company, *Witness* said the Company was prepared to give supplies to gas undertakers there, and it would be economical for some of them to take such supplies.

To the suggestion that if the Company stored the coke oven gas available at week-ends, it would not be at the limit of the amount of coke oven gas available now, he replied that the cost of so doing was prohibitive.

Mr. NEEP said that the maximum daily output of the Chesterfield Corporation Gas Department in 1938 was just under 3 million cu.ft. per day. In the four years from 1934 to 1938, the annual output increased from 418 to 729 millions, or nearly double. The maximum that could be supplied from the gas-works there was about 287 million cu.ft. A supply of coke oven gas was obtained from the Grassmoor coke ovens, and was being fully used. By 1941 the undertaking would be using, in addition, the whole of the supply it was about to secure from the Hardwick coke ovens.

Witness said in that case the Chesterfield undertaking must be contemplating an increased demand of approximately 200%.

COUNSEL said that by 1941 the Corporation would have to provide 1,179 millions. By that time it would be using the gas-works to the maximum capacity and would be using all the coke oven gas it could get under existing contracts from Grassmoor and Hardwick.

Witness said he could not see that the Corporation could use all that was available at Hardwick. He had been informed by the Manager of the Hardwick coke ovens that there were 1,200 millions per annum there to be disposed of, and that alone was more than the Corporation expected to supply in 1941. He agreed that it would not be proper or feasible to enlarge Chesterfield Gas-Works.

It was pointed out by Counsel that when the Chesterfield Corporation's existing coke oven gas contracts ended, and assuming the Bill were passed, the Corporation would have to compete with the Company for supplies of coke oven gas from Staveley, near Chesterfield, and Witness was asked whether he would be prepared to allow Chesterfield, in the future, to take all the coke oven gas it required from the urban district of Staveley. He replied that he was not, and pointed out that there was available at one coke oven plant at the moment sufficient gas to meet the needs of Chesterfield for another 10 or 15 years. There was nothing in the Bill which would prevent Chesterfield competing with the Sheffield Company for further supplies in the future.

COUNSEL asked if witness considered it a fair proposition to say that a comparatively small undertaking such as that at Chesterfield should compete with the Sheffield Company and take its chance of securing a supply.

Witness replied that he did, because the Chesterfield Corporation already had at its disposal so much coke oven gas that supplies had been sterilized, and he did not think it right that the Corporation should sterilize supplies.

COUNSEL asked whether he was prepared to undertake that the Corporation should secure an adequate supply in that area.

Witness said he was not prepared to place himself under any obligation in that respect.

In re-examination, *Witness* said that at the Company's offices in Sheffield he had an instrument which indicated the supplies that were being given by each of the coke ovens which were supplying gas to the Company, so that he was able to maintain a constant check. He was in direct telephonic communication with each coke oven, and in the event of supplies becoming irregular, he was able to deal with the matter at once. During the last year or so he had been constantly pressing the coke oven owners for all they could supply. With regard to Rotherham, he said the Corporation there would remain free, as at present, to compete with the Company for supplies. The Company did not seek to escape equality, but was not content to give them priority.

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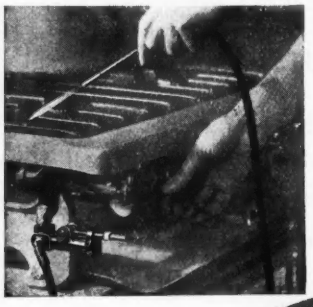

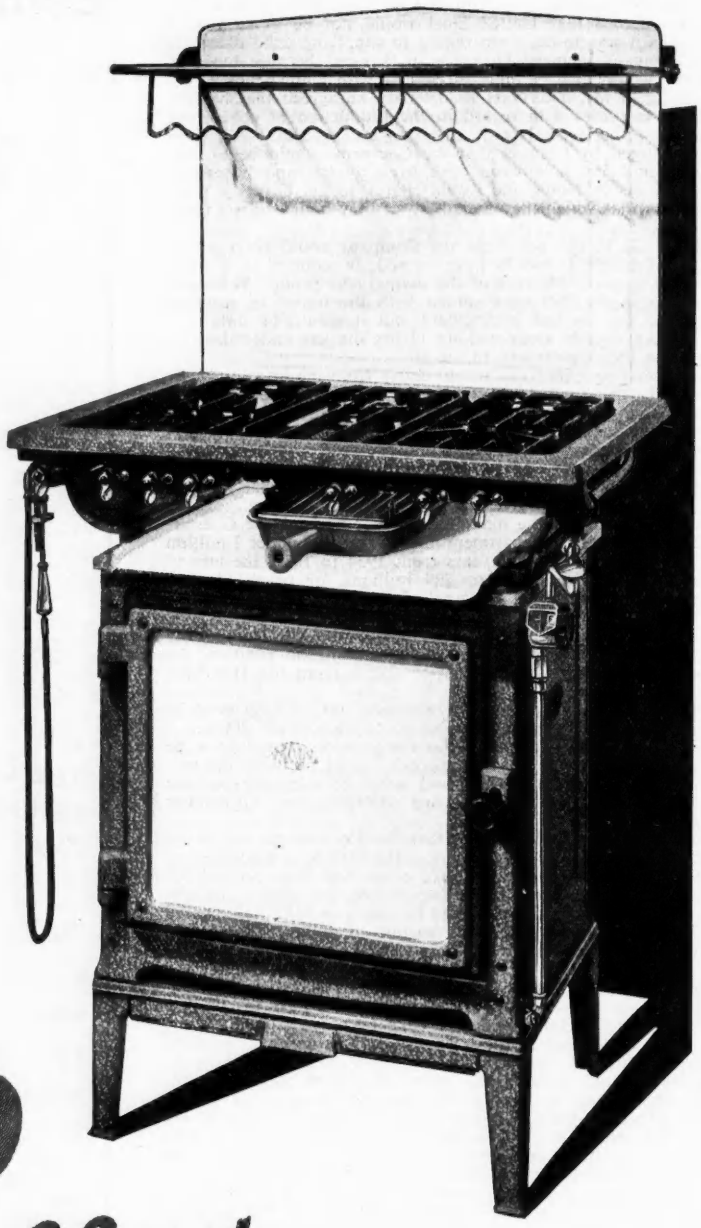

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Imperial Continental Gas Association

The One Hundred and Ninetieth Ordinary General Meeting of the Proprietors of the Imperial Continental Gas Association was held on Friday, May 27, 1938, at Winchester House, Old Broad Street, London, E.C. Sir THOMAS ROYDEN, Bart., C.H. (Chairman of the Board), presided.

The SECRETARY (Mr. C. S. W. Harriss) read the notice convening the meeting, and the Auditors' Report on the Accounts.

With the approval of the meeting, the Report of the Directors and the Statement of Accounts for the year ended March 31, 1938, as printed and submitted, were taken as read.

The CHAIRMAN said:

Ladies and Gentlemen,—

The Report and Accounts have been in your hands for some time. May I take it that, in accordance with our usual practice, they be taken as read?

Before dealing with the Accounts of the past year, I will first review the more important events that have affected the conduct of our business generally.

Situation in France.

When we met here last year I told you that the situation in France had caused, and still was causing, a feeling of uncertainty and, indeed, of some apprehension. That feeling of uncertainty, and on occasion of apprehension, continued throughout the past year. Political and industrial conditions in France have been very unsettled and there has been a complete lack of confidence in the future. This period has been marked by a continuous and heavy fall in the international value of the franc. Two years ago the franc, *vis-à-vis* the Pound Sterling, stood at 75; last year at this time it had fallen to 110; to-day it has fallen further still and now stands at 178. For this unhappy and uninterrupted decline there are many contributory causes. It is easy to put the blame on the speculator. It is true that there has been a large volume of bear operations during the last two years, and almost inevitably so seeing that those who conducted them were armed with the comfortable assurance that the political and industrial views of those in power would inevitably drive the franc lower and lower, so that what ordinarily would be a form of speculation became a profitable certainty. In fact, the troubles of the franc were the outcome not of bear speculation, but of the inherent unsoundness of the economic position.

Further, it is not only the speculator who has been taking an interest in the problem of the franc. Uncertainty as to the future inevitably drove the funds that would under normal conditions have found employment in the development of French industry to seek refuge in more stable currencies. One of the chief (if not the chief) troubles from which France is suffering is underproduction. Experience has shown that the reduction in working hours, known as the forty-hour week, has so affected the potential output of the country that consumption has far exceeded production, with the inevitable consequence that everywhere there is a continuous rise in prices and in the cost of living.

The bold step taken by the present Government in fixing a minimum value to the franc has so far been justified by its results. If it is followed by a resolute policy in connexion with the working hours and a real drive to reduce public expenditure, the whole picture will change and we shall see once more a prosperous and industrious France.

The Compagnie Continentale.

Meanwhile, the long drawn-out fall in the franc has affected most prejudicially the revenue obtained by this Association from its investments in that country. For the last three years the Compagnie Continentale has maintained its dividend at Frs. 65 per share; but, with a continually falling rate of exchange, the sterling equivalents have been £223,000 in respect of the 1935 dividend, £155,000 in respect of 1936, and £93,000 for 1937. The Compagnie Continentale normally pays an interim dividend in November and the final dividend in May, so that the full force of the current rate of exchange has not yet been felt as, at the present rate of Frs. 178, a full year's dividend at Frs. 65 per share would produce only £87,000.

Nor was this the only adverse factor in our Continentale investment. That Company, in spite of general trade stagnation in France, reported an increase of just under 1% in its sales of gas and of 9·5% in the sales of electricity. This increase in business was, however, accompanied by rising costs and heavier taxation. Since July, 1935, there have been substantial advances in wages, while the cost of coal has risen by 67%. Nevertheless, the average price the Compagnie Continentale was permitted to charge for electric current was less than that chargeable in July, 1935.

One might be pardoned for thinking that this was a sufficiently severe burden for the Public Utility companies to bear. The French Fiscal Authorities have thought otherwise. A special surtax, over and above the ordinary profits tax, has been imposed upon Public Utility undertakings, and, in addition, the tax on undistributed profits and the tax on the reserves of Gas and Electricity Companies have been increased by 50% over and above the normal rates.

There is absolutely no justification why, because ours is the least mobile of all industries, Governments should seek to impose special taxation burdens upon Public Utility enterprises in order to make good the loss of revenue arising from the fact that capital of a more fugitive character has taken refuge elsewhere.

Having regard to the attitude of the Authorities to Public Utility companies, the Board of the Compagnie Continentale has hesitated to embark upon further developments, but every step has been taken to maintain existing plant in a state of the highest efficiency: for instance, at the present moment that Company is completely modernizing the equipment of its Lille Power Station by the installation of new turbine and boiler plant.

Recent experiences in France not being such as to encourage the investor to risk the investment of further capital in Public Utility undertakings, the Compagnie Continentale decided to make a special distribution from Reserves amounting to Frs. 50 gross per share, which, in addition to the normal dividend, will be brought into the accounts which we present to you next year. The Compagnie Continentale is able to make this additional dividend payment out of accumulated reserves which were invested in French Government securities and which have now been realized.

The Question of Future Expansion.

The Imperial Continental Gas Association built up its French organization at a time when the outlook for Public Utility undertakings was much less secure than it is generally supposed to be to-day. That organization, which subsequently became the Compagnie Continentale, has, like our other Subsidiaries, always endeavoured to hold the scales evenly as between the consumer of gas and electricity on the one hand, and the shareholder on the other, but surely no Government, French or other, can expect that funds will be kept in hand for future development when, apart from other considerations, the purchasing power of those funds is being reduced from day to day. We sincerely hope that the day will shortly come when reasonably stable political and economic conditions will justify resumption of expansion. If, and when, that time comes, the Board of the Compagnie Continentale disposes of adequate resources, but development generally is bound to be arrested until Governments realize that if they wish to attract private capital, they must be able to show conditions which inspire confidence.

The French Governments of the last two years have adopted the standpoint that the real value of dividends should be reduced, while the real value of wages should be increased. This attitude would be justified if dividends in the past had been excessive, but such is not the case.

Public Utility undertakings in France have profited from no wild prosperity which would justify the present penal treatment. When French National Economy is troubled, it is the obvious duty of the French industrialist to make as full a contribution to improve conditions as possible, but the sense of grievance would be less if he were given some assurance that the present treatment is exceptional and that at the earliest opportunity he will be given a fair chance of earning a reasonable return upon the real capital invested.

This is a somewhat depressing picture of the French situation, but comfort may be found in the relatively small percentage of our French revenue. In fact, our investment in the Compagnie Continentale, which used to be our principal asset, has, judged by the importance of the dividend received, now fallen to fifth place among our interests.

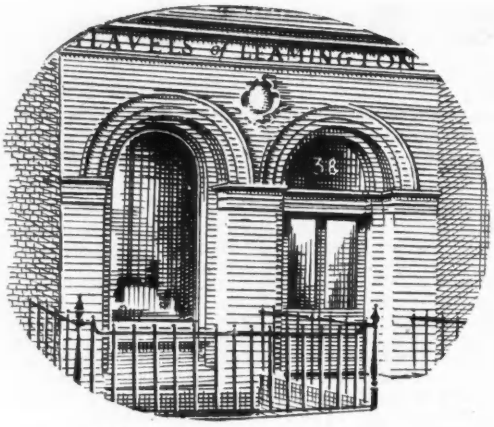
Clearly, the reduction in two years of the sterling value of the dividends of our investment in France, amounting to £130,000, cannot be viewed without misgiving as to its effect on the future profits of our Association.

The French Government seem to have realized that the only possibility of increasing taxable revenue is to increase production and, to this end, they are now taking steps to provide cheap credit facilities and to modify the regulations governing the forty-hour week.

If trade does improve in France, this should lead to an increased demand for gas and electricity and result in better conditions in the Public Utility business. It is impossible at this moment to forecast with any degree of certainty the course of events in the current year. One can only say that at the moment the outlook in France is not without hope of improvement.

Exchange Speculators and the Belga.

If the situation in France is disappointing, we have found compensation in the higher dividends which have been distributed by



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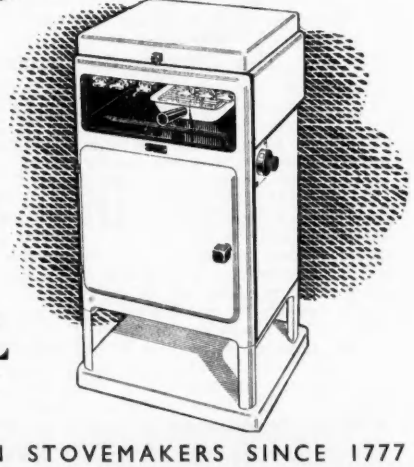

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our Belgian undertakings. Thanks to the more favourable trading conditions in that country, we received this year from Belgian sources an increased sum of £54,000, despite a fractionally less favourable rate of exchange.

Unfortunately, exchange speculators have recently directed their attention to the Belga and the pressure against that currency has been intensified owing to the difficulties which the Belgian Government has found in balancing its budget.

It is true that at the present moment Belgium is suffering from a recession of trade, but this is common to most countries.

The fears which have been expressed for the stability of the Belgian currency seem to be grounded upon the assumption that, as France and Belgium have a franc currency and are economically interdependent, the smaller of the two cannot afford the luxury of a more "expensive" currency than its neighbour.

The facts do not bear out these views. It is significant that since the war the French and Belgian franc rates have been at parity only for brief periods in 1921 and 1925. The fact that both currencies are commonly expressed in francs does not link them together. The wide disparity between both currencies and the Swiss franc is proof enough of this point.

Again, the contention that the two nations are economically interdependent is largely unfounded. France buys only 8% of Belgium's output of manufactured goods. The Sterling block buys 41%. Belgium's future lies more within the orbit of the latter, whereas France, with her heavy tariffs and quotas, follows a more independent path towards partial self-sufficiency. On this account any modification, either up or down, in the price of Belgian goods would not greatly affect their sale in France.

It is true that both countries compete with each other in certain classes of exports, but any temporary advantage gained by France on account of an internal under-valuation of her currency will probably be quickly redressed by a rise in manufacturing costs, and this rise will be further stimulated by the heavy taxation which must be imposed in order to place the country's finances on a sound footing.

A further devaluation of the Belgian currency would solve no problems; neither those of balance of trade nor of budgetary equilibrium. Economically, Belgium is still in a strongly fortified position: the last devaluation occasioned a rise in gold values equivalent to 38%; the rise in the retail index numbers has only been in the neighbourhood of 22%; hence a substantial export premium still exists.

Ample Protection for the Belga.

Prior to the recession of trade which began during the last quarter of 1937, Belgium enjoyed two years of great prosperity. This period has been taken advantage of by both the banker and the industrialist to strengthen their respective positions. Recent events show that the banks are able to face considerable withdrawal of funds without serious inconvenience. Further, the Belgian authorities have ample means with which to defend the currency and they are prepared to go to extreme lengths for this purpose.

The industrialist has used a fair proportion of his extra profits for the modernization of plant, and now, owing to the scarcity of new business, is engaged in building up normal stocks, which had become exhausted owing to intensive demand. In France, on the other hand, little has been done in the way of industrial re-equipment.

The satisfactory Belgian results of the year under review are due not merely to our Public Utility business, but to all branches of our industrial activities.

The sale of gas in the Belgian Companies in which we are interested shows increases varying from 3·5% to 10·2%, while for electricity they vary from 5·9% to 16·5%. Furthermore, the price of gas and electricity has been permitted to follow upwards, though at a respectful distance, the general increase in the cost of living.

Our industry has been particularly free from any special measures of interference on the part of the Belgian Government, although a proposal has recently been brought forward to apply a special rate of tax to Public Utility companies. It is sincerely to be trusted that the Belgian Government will continue to realize that an industry which is encouraged to expand, by an assurance of fair trading conditions, is an asset of national value both as a taxpayer and also for the important business it gives to the manufacturing industries. The moral of what has already been achieved in the field of electrical development as a result of the Belgian Government's policy of non-interference is worthy of emphasis.

In Belgium, unlike Great Britain, there is no National Grid, there is no limitation of profits, and there is no body, such as the Electricity Commissioners, to dictate to suppliers of electricity what they should do or what they should not do. Private enterprise has been given a free run, and its success or failure can be judged only by the one test of whether the supply of electricity to its customers is readily available at a reasonable price. The results are striking. In Belgium 89% of the population has a supply of electricity, as compared with 59% in Great Britain. The average price paid in Belgium for current for all purposes is 0·89 pence per unit, as compared with 1·107 pence in Great Britain.

Superiority of Private Enterprise.

Not merely are these results an eloquent testimony to the advantages of a policy of non-interference by the Government, but they show the superiority of private industry over municipalized undertakings, for in Belgium 74% of the consumers are supplied by companies and only 26% by public authorities, whereas the corresponding figures for Great Britain are 39% and 61%.

The power stations of the two countries produce current at about equal cost, but in the case of Great Britain the charges of the Central Electricity Board place distribution undertakings at a distinct disadvantage as far as cost price is concerned. The interconnection of all the leading power stations in Belgium has been carried out by the enterprise of company undertakings, and there has been no need for the Government to intervene with a grid system. Frequency and distribution voltages have been standardized throughout the company areas; only in a few undertakings, and they, be it noted, are under municipal management, are non-standardized networks still in operation. Current for power purposes is supplied over 16% more cheaply than is the case in Great Britain, while the average price of current supplied for all purposes is 22% less for Belgium than for Great Britain. Nor is the claim of the small householder in any way neglected, for it is estimated that in Belgium a loss is made on the supply to over 55% of the average total domestic consumers connected in the areas served by the companies.

This record of achievement in Belgium would not have been possible unless supply was for the most part in the hands of a few large well-managed undertakings. It is very much to be hoped that the Belgian Government will view this record with satisfaction and will be content to leave well alone, and that the British Government will be induced to follow suit and thus save the industry, consumer, and taxpayer the expense of supporting a conscientious and hard-working but possibly not wholly essential army of officials.

As you are aware, this Association has a very considerable interest in the electrical industry in this country through its investment in Edmundsons Electricity Corporation. The British Government appear to be in two minds as to whether they should bring in fresh legislation to deal with the industry. The example of Belgium might well be studied with advantage, when the obvious conclusion would be drawn that the industry should be left to work out its own salvation.

Those of you who are interested in our very important investment in Edmundsons Electricity Corporation may, if you care to notify our Office, have a copy of that Company's Report and the Chairman's Speech, as soon as they are available. Since our Report was issued, a final dividend of 5% has been declared, making 9% for the year, both on the old shares and proportionately on the new shares which were issued in January, 1938. Edmundsons continues to make good headway, and for the first four months of this year the units sold show an increase of 9%, compared with the national average of 5·7%.

Expanding Uses of Gas.

I have so far tended to stress the electrical side of our activities, but our Belgian and French gas interests, from which a large part of our revenue is derived, should not be left out of the picture.

Although in France our sales of gas show an increase of only just under 1%, in Belgium increases ranging from 3½% to over 10% have been registered. The Belgian results are a great testimony to the vitality of the Gas Industry in a country which, as I have just explained, is very highly electrified.

In the domestic field, gas is barely holding its own; but, by the aid of special tariffs, the variety of purposes for which it is being utilized is expanding rapidly. In particular, its advantages as an industrial fuel are receiving much wider recognition.

Before passing to the Accounts, it should be mentioned that the satisfactory results which we are able to place before you to-day are due more particularly to the first eight months of 1937, rather than to the last four months of that year, for towards the end of the year a slight recession of trade had already made itself apparent. Nevertheless, owing to the general re-alignment of our interests, the financial results for the first three months of this year are as satisfactory as those for the corresponding months of 1937.

The Accounts.

I will now ask you to turn to the Accounts which are in your hands. Beginning with the Balance Sheet, the first item on the right-hand side, Fixed Assets, shows a reduction of £4,000, which represents the sum realized from the sale of a small property in Brussels.

The next item, Investments in Subsidiary and Allied Companies, shows a reduction of £139,000. On the one hand, we have transferred further holdings in our Belgian Operating Subsidiaries to Contibel, the Belgian Holding Company, in order to

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complete its status as the majority shareholder in each of the Operating Companies. The funds to finance this transaction were provided by our Financial Subsidiary, the Utility Loan Company, which has brought about an increase in the item Advances to Subsidiary and Allied Companies.

On the other hand, we took up during the year new Ordinary Shares of Edmundsons Electricity Corporation, Ltd., to which we were entitled in the new issue of that Company.

Advances show an increase of £88,000. This is less than the sum required to finance the sale of shares to Contibel, the explanation being that we have received during the year some substantial loan repayments from our Belgian Operating Subsidiaries.

Taking the two items of Investments and Advances together, we arrive this year at a total of £10,577,000, which does not differ appreciably from that of the previous year. In the case of investments of this nature, it is difficult to arrive at an accurate valuation where the greater part of the investments are not quoted, and where, in the case of the quoted securities, the dealings on the Bourse are on a very small scale. Your Board is, however, satisfied, by reference to similar securities which are regularly quoted, that the aggregate value of the Association's investments in its Subsidiary and Allied Companies exceeds the book value shown in the Balance Sheet.

At the same time the margin between the valuation and the book value of these holdings has, over the year, again shown a considerable shrinkage, which is mainly attributable to the investment in the Compagnie Continentale. In this case the shares not only showed heavy depreciation when translated into sterling, owing to the devaluation of the franc from Frs. 106 to Frs. 162, but were actually quoted in francs at a lower figure at March 31 last than they were a year ago.

Edmundsons Electricity Holding.

Market conditions in this country, which were particularly unfavourable at March 31 this year, also adversely affected the value of our important holding in Edmundsons Electricity Corporation. There has, however, been a substantial rise in this quotation since that date.

The fact that for the fourth year in succession there has been a diminution in the market value of our investments and that, nevertheless, their actual value is still higher than their book value, shows the latent strength of the Association's Balance Sheet.

The only item among the Current Assets to which reference need be made is General Investments, which at £81,000 show a decline of £22,000 over the year. This is accounted for by certain sales which were effected in order to finance the additional holding in Edmundsons Electricity Corporation. The market value of the remaining investments is £97,000.

On the left-hand side of the Balance-Sheet, Loan Capital shows a reduction of £11,000. This represents purchases of our Debentures on the market for cancellation.

Amounts owing to Subsidiary and Allied Companies are £34,000 less than they were a year ago, but the figure is not of any particular significance for we act as Bankers to the various companies of our Group and the deposits they make with us and the loans we make to them vary from day to day.

Sundry Creditors and Provisions amount to £492,000 this year, against £477,000 at March 31, 1937, the increase being due to our having to provide for National Defence Contribution on this occasion. The major portion of our Creditors and Provisions consists of long-term accounts, of which the principal are the Pension and Taxation Equalization Reserves.

Loans from Bankers show a considerable reduction at £61,000, despite the further investment in Edmundsons Electricity Corporation. Repayments of Loans by Subsidiary Companies and sales of General Investments have combined to bring this about. Since the date of the Balance-Sheet the Bank Loans have been cleared, and we now have a substantial sum in hand in anticipation of the dividend.

The proposed Final Dividend will absorb £243,600, as against £252,000 last year. The reduction in this item is due to the deduction of a further 6d. in the £ for Income-Tax which has to be made on this occasion.

General and Specific Reserves show an increase of £32,000, due principally to profits realized on the sale of General Investments.

There are only comparatively minor changes in the Accounts over the last twelve months, but it is of interest to recall the salient movements which have occurred in, say, the last five years.

Apart from the transfer of certain directly-owned assets to our Belgian Subsidiary Companies, which was in the nature of a book entry, we have during this period disposed of our Prague and Flushing gas undertakings and of our shareholding in the Berlin Electricity Company. The French Compagnie Continentale also made us a repayment of capital and we have received on balance substantial cash repayments of loans to our Belgian Companies. The total result of these movements was to bring home cash to the extent of £1,700,000. This sum, together with £900,000 taken from the Current Assets available in 1933, has now found its way into permanent investment in England.

As a result of these transactions, the geographical make-up of our Balance-Sheet has changed to the extent that, whereas in 1933 only 8% of our Assets (based on book values) was situated at home, this percentage has now risen to 25.

In view of the political and economic situation on the Continent over that period, we can congratulate ourselves on the considerable repatriation of funds which this increase in home investments represents, even though this has involved some loss in revenue.

Notwithstanding our reduced income, our liability for British taxation is substantially the same as it was in 1933 owing to the imposition of the National Defence Contribution. The political situation has, therefore, tended both to reduce our receipts and increase our expenses.

Increased Revenue from Belgian Sources.

If you will turn to the Profit and Loss Account you will see on the right-hand side that the Association's income from dividends, &c., has arisen by nearly £35,000. We received this year an increased sum of £54,000 from our Belgian interests and £40,000 more from home sources, but our French revenue showed a decline of £59,000. The effective rate at which our French revenue was brought into account this year was Frs. 92 to the £, against Frs. 79 in the previous year. This year's rate of Frs. 92 compares with the average rate on the dates on which dividends were received of Frs. 123.

The increased revenue from Belgian sources reflects the more favourable trading conditions in that country, whilst the higher revenue from home sources results principally from the receipt of a full year's dividend from Edmundsons, against an interim dividend only in the previous year.

N.D.C. Exemption Denied.

On the left-hand side of the Profit and Loss Account there is an increase of £34,000 in expenditure. This is entirely due to taxation. In addition to the additional charge of 3d. in the £ imposed by last year's Budget, we have also had to set aside a substantial sum for National Defence Contribution. It is difficult to understand why Public Utility Companies operating abroad should have been denied the exemption given to such undertakings in this country, but such is the case, and representations made to the Treasury by companies in the same position as ourselves did not succeed in extending the scope of exemption beyond companies operating in the Dominions. Outside our Edmundsons investment our interests lie entirely in foreign countries and we become liable to this new tax on all revenue received from the latter source.

The Net Profit for the year at £427,686 differs by only a few hundred pounds from that of the previous year, but owing to the change in the rate of Income-Tax last year the dividend we now recommend to you of 10%, less tax, will require £411,600, as compared with £422,800 last year, leaving the sum of £16,086 to be added to the Carry-Forward.

The Rt. Hon. Sir GUY FLEETWOOD WILSON, G.C.I.E., K.C.B., K.C.M.G.: I have the honour to second the motion which our Chairman has proposed.

(The resolution was carried unanimously.)

Election of Retiring Directors.

The CHAIRMAN: I have the pleasure to move that Sir George Jessel, Bt., M.C., Sir John R. Chancellor, G.C.M.G., G.C.V.O., D.S.O., and Sir Georges Theunis, G.C.M.G., who retire from the Board, be re-elected Directors of the Association.

Mr. H. G. PALMER: I have very much pleasure in seconding the motion.

(The motion was carried unanimously.)

Re-Election of Auditors.

Mr. F. W. WILLS: I beg to move that the firm of Messrs. George A. Touche & Co., of Basildon House 7-11, Moorgate, London, Chartered Accountants, be appointed Auditors for the ensuing year at a fee of Two Hundred and Fifty Guineas.

Mr. JOHN E. LLOYD: I have very much pleasure in seconding.

(The resolution was carried unanimously.)

Vote of Thanks to Chairman and Directors.

Col. A. CHRISTIE, C.M.G., D.S.O.: I should like to propose a hearty vote of thanks to our Chairman and his co-Directors. The public utility business is perhaps more difficult than any other: bearing in mind that our businesses are not only in this country but also on the Continent, we owe them a very hearty vote of thanks for their conduct of our affairs during the past year.

Mr. H. HALMSHAW: I have pleasure in seconding.

(The vote of thanks was carried with acclamation.)

The CHAIRMAN: I thank you very much, ladies and gentlemen, for your kindness.

(The meeting then closed.)

Parkinson & Cowan, Ltd.

Resumption of Ordinary Dividends

The 38th ordinary general meeting of Parkinson & Cowan, Ltd., was held on May 27 at Terminal House, Grosvenor Gardens, London, S.W. 1—Lieut.-Col. HAROLD W. WOODALL, C.I.E., M.Inst.C.E. (Chairman and Managing Director), presiding.

The SECRETARY (Mr. A. Gordon) read the notice convening the meeting and the report of the auditors.

The CHAIRMAN, in the course of his speech, said: When addressing you last year, I referred in my closing remarks to the outlook and said that, in spite of difficulties common to all manufacturing concerns at that time, your directors were making every effort to further the encouraging improvement shown in the accounts then before you.

The difficulties continued, but our efforts met with a certain measure of success, as is shown in the 1937 accounts, which are now in your hands. We are not, however, satisfied that the recovery is yet complete, and are maintaining our efforts to the full. In the meantime, your Directors feel that the results achieved in 1937 justify the resumption of the payment of a dividend on the ordinary shares.

After providing for legal tax liability, the trading profits for the year of the subsidiaries exceeded the £100,000 mark, £63,525 of which has been paid by them in dividends to the Parent Company, as shown in the profit and loss account. Certain reserves for taxation have been made in the accounts of subsidiaries and the amount of their surplus profits carried forward—*viz.*, £65,871 is £23,100 higher than last year, as is shown in the statement of assets and liabilities.

The net profit of this Company for the year was £60,820, compared with £44,641 in 1936, and as regards the disposal of the balance of £49,561 at credit of the profit and loss account, the recommendations of the Board are contained in the Directors' report before you. If the proposed appropriations for ordinary dividend and transfer to reserve account are approved, the balance to be carried forward to next account will be £20,688, as against £14,146 brought in.

It will be appreciated from my remarks that, although a dividend of only 3% on the ordinary shares is recommended, the earnings of the subsidiaries represent a considerably higher rate. The improvement in trading results of the Group in the year under review was actually better than is indicated by the accounts, as the subsidiaries have been burdened not only with higher costs for material and labour—which were only partially recovered by increasing selling prices—but they have been charged with approximately £3,400 for N.D.C. for nine months and with £1,332 for holiday pay awarded during the year. A full year's charge in respect of both these items will have to be borne in the current year. The provision for holiday pay is one that no one will grudge, and will, we hope, result in greater pleasure and improved health for our employees, but when it is remembered that in Great Britain alone the number amounts to 3,500, you will realize that these charges impose a heavy burden on our resources.

I might also mention that the net profit of this Company would have been £2,182 higher but for the recent increase of 6d. in the rate of income-tax, as the dividends received from subsidiaries were lower on that account by the amount stated. I think, however, that most of us would prefer to pay to preserve peace rather than to prosecute a war: and in the disturbed conditions of the present day, we must look upon this as a necessary burden to be borne in a patriotic spirit in the furtherance of the Empire's Defence Programme.

Record Turnover.

The past year started on a high note of promise, and, though there were difficulties in securing suitable labour and material, the steady progress of recent years was maintained and a record turnover achieved. This increase was secured in the face of intense competition, and in spite of the adverse effect of a mild early winter on our gas fire sales, accompanied by a certain recession of confidence on the part of the purchasing public generally during the latter part of the year, due very largely, no doubt, to the disturbing developments in the international political situation.

In face of rising wages and increased cost of materials, we have been strenuously engaged in an endeavour to keep costs of production within reasonable bounds. That we have been able to do so is due, in the main, to the measures we have taken in recent years for the modernizing of our factories and for the introduction of up-to-date methods and machinery.

Technical and Research Developments.

To meet modern conditions it is more than ever necessary that constant and detailed consideration should be paid to development work. In this connexion the appliances we have produced in recent years and the reputation we have established speak for themselves, and are a clear indication that the work of our Technical Staff is second to none.

For some years past The Parkinson Stove Company has been leading in the design of cookers of the "straight-line" type, with easily cleaned surfaces. In 1932 the Company introduced the straight-line "Birma" cooker to the Industry. In 1933, the "Minette" cooker was introduced, incorporating a folding cover on the hotplate. In 1934, the "R.A." cooker was developed by our Stove Company and displayed in the Art in Industry Exhibition at the Royal Academy in 1935.

The Parkinson "Renown" cooker now leads the fashion in cooker design, and while providing the public with a cooker of distinct "eye-appeal" it retains the robust structural features which render the cooker eminently suitable for long-term hire purchase and economical maintenance.

At the British Industries Fair this year we displayed a new cooker to be known as the "Crown." This will be available shortly, and will meet the demand for a lower-priced cooker built on straight lines and of sound construction. Special attention has been paid to the design of taps and other components of the cooker to provide for the most economical maintenance.

Waterless Cookery.

Work in our Research Kitchens continues to yield admirable practical results. Last year we produced the Parkinson Cookery Book, "Perfect Cooking," which was welcomed as a work of outstanding merit. This year we made a special survey of what is known as "waterless cookery," and as our special contribution to the National Gas Cooker Fortnight produced a booklet entitled "Waterless Cookery." This has proved a valuable contribution to the literature of cooking and to a subject which, while of utmost importance to the health of the country and of assistance to the Nation's Health and Fitness Campaign, has received too little attention in the past. We are among the oldest makers of gas water heating apparatus, and have models suitable for almost every purpose.

Our gas lamp business has greatly expanded in recent years, and Messrs. W. Parkinson & Co. have very able lighting experts who will gladly advise clients who may be preparing schemes for improved street lighting. As regards our gas meter department, although it is one which is of more interest to the Gas Engineer than to the general public, shareholders may like to know that this important section of our business has contributed its quota to the improved results of the year and that we are satisfied that we have upheld our reputation as one of the oldest and most progressive firms of meter makers in this country.

The Outlook.

These are unsettled times, and one could mention a number of reasons to account for the noticeable curtailment of domestic and other purchases during recent months. While we cannot expect that our particular business will remain unaffected by the general trend of industry throughout the country, the indications so far and the results for the first quarter of the year are such as to leave me hopeful regarding the immediate future of this Company. Taking the longer view, a return of confidence throughout Europe and America would, I believe, result in an increase of business generally that would be almost startling, but till such change takes place your Directors feel that it is prudent to continue a policy of consolidation, while at the same time preparing to take full advantage—when it comes—of the hoped-for business revival.

In conclusion, it is once again my pleasant duty to express on behalf of my colleagues and myself, our high appreciation of the work of our staff and employees. As regards the former, I share, with my colleagues, a feeling of genuine relief that our chief officials—all of them young men—have been able to take over so much of the responsible work, and am confident that no company in our Industry is better served by its staff and representatives. As regards our employees, our relations are of a happy and cordial nature and will, I hope, remain so for many years to come.

The Report and Accounts were unanimously adopted, the retiring Directors and Auditors were re-elected, and the proceedings closed with a vote of thanks to the Chairman, Directors, and staff.

Trade Notes

Metropolitan Gas Meters, Ltd.

Metropolitan Gas Meters, Ltd., announce the appointment as Northern Sales Representative of Mr. Harold Wharmby, who for many years has been the Sales and Advertising Manager to Wilsons and Mathiesons, Ltd.

New Rawlplug Product.

A new fixing device has been evolved by the Rawlplug Company, Ltd.; it is the Rawlplug Screw Anchor, which, however, does not supersede the fibre Rawlplugs. They have been devised to supply a demand for an anchor made of metal to resist climatic conditions and overcome prejudices against non-metallic fittings without sacrificing the advantages of resilience with the fibre Rawlplug.

Hancock Oxygen Cutting Machines.

We are asked by Messrs. Hancock & Co., Ltd., of Croydon, makers of 26 models of the Hancock Oxygen Cutting Machine, to state in the clearest possible manner that they are an entirely independent Company. They have no connection whatsoever with any other concern who market an oxygen cutting machine. Their machines are manufactured in their own works in Croydon, where they have specialized in oxygen cutting for some 16 years, and where they make not only a standard range of models, but also machines to suit customers' special requirements.

Head Wrightson's Steel Foundry Extension.

The manufacturing facilities at Head Wrightson's Thornaby Steel Foundry, producing carbon and special alloy steels have been considerably augmented by the addition of a new building which has been equipped principally for core production. This recent extension, which is of all-welded rigid frame construction, has been erected adjacent to the existing foundry buildings, the total length being 155 ft., divided into seven bays, the height to eaves being 29 ft. A 5-ton crane spans the 35-ft. width. The complete design, manufacture, and erection was carried out in the Company's departments.

Removal of Organic Sulphur from Gas.

The removal of organic sulphur from gas by the "Holmes" and Gas Light and Coke Company Processes is the subject of a handsome folder recently issued by Messrs. W. C. Holmes & Co., Ltd., of Huddersfield. Most gas engineers are now familiar with the process of oil washing of gas for the extraction of naphthalene and for the recovery of benzole. The adaption of oil washing methods for the extraction of sulphur has presented certain new problems, which are briefly considered in an interesting manner in the folder. The largest installation at present in operation is, of course, at the Kensal Green Works of the Gas Light and Coke Company. This plant treats 8 to 9 million cu.ft. of gas daily, recovering 90% of the benzole and removing 80% of the organic sulphur content.

Denso Film Service.

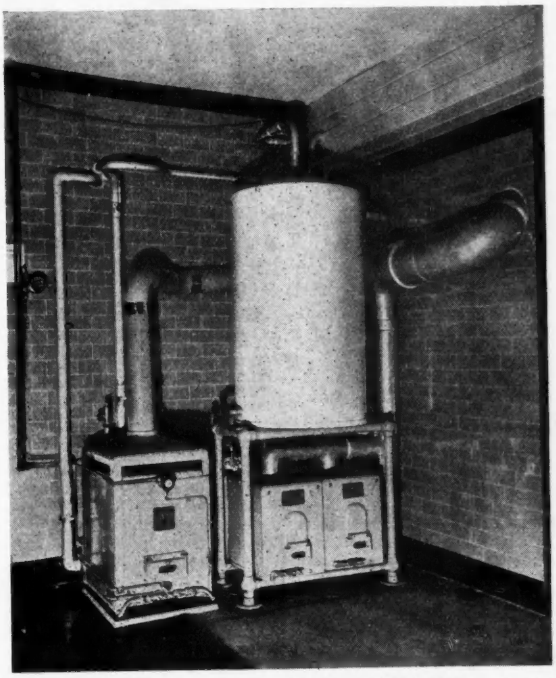
We learn from Messrs. Winn & Coales, Ltd., 40, Trinity Square, E.C. 3, that they have a number of 16 mm. films illustrating the use of "Denso" permanently plastic anti-corrosive wrapping as applied to normal gas, water, and electrical practice and to emergency practice during air raids. These films the Company are willing to loan, together with projector and operator, to engineers for exhibition to their main-laying staff, to engineering societies, colleges, and similar institutions.

Among these films is one showing how a burning main may be treated after it has been damaged by a high explosive bomb. Others show the application of "Denso" wrapping to mains of large diameter.

Bottled Gas for a Railway Station

In our issue for May 18 we referred to the proposed installation of bottled gas for the lighting of Ratho (Midlothian) Station on the L.N.E.R. We are informed by Messrs. W. S. Ferguson & Co., Ltd., of Perth, that the installation contemplated is of their "Rural Gas," and that the brand of bottled gas to which we referred has not been installed.

GAS FIRED CENTRAL HEATING & HOT WATER SUPPLY FOR GAS SHOWROOMS



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A complete installation of Central Heating with "REX" Boiler and low pressure radiators has been installed for warming the new Seaford showrooms of the EASTBOURNE GAS COMPANY, with "EMPEROR" Thermal Storage set for the supply of hot water throughout the offices and demonstration rooms.

•

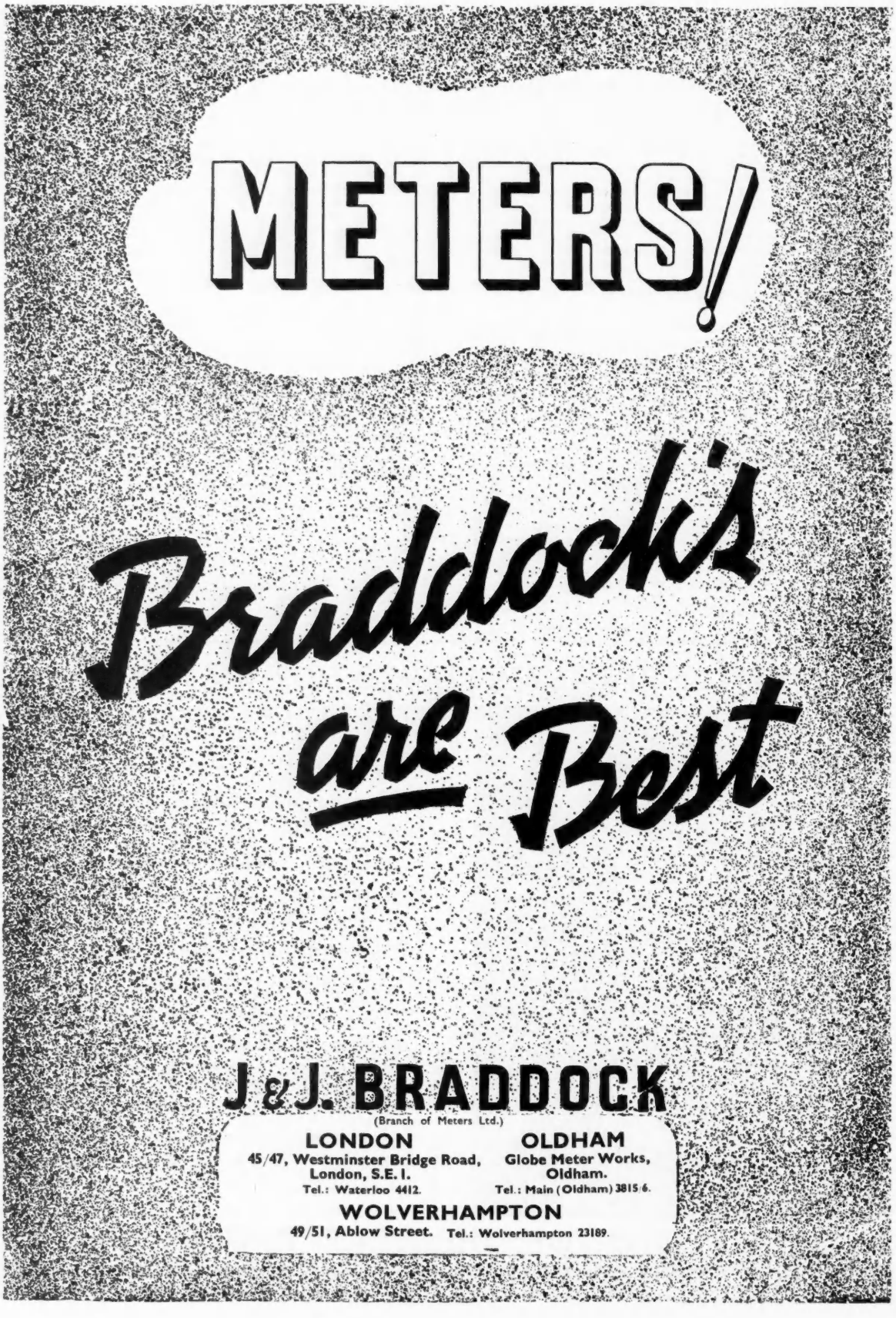
The illustration shows the No. 1 Series "REX" Gas-Fired Boiler for Central Heating and the twin "EMPEROR" Boilers and storage plant fitted in the heating chamber.

THOMAS POTTERTON (HEATING ENGINEERS) LTD.,

'Phone: Balham 1244-5-6

Cavendish Works, Balham, London, S.W. 12

'Grams: Potterton, Toot, London


METERS!
Braddock's are Best
J & J. BRADDOCK
(Branch of Meters Ltd.)
LONDON
45/47, Westminster Bridge Road, London, S.E. 1.
Tel.: Waterloo 4412.
OLDHAM
Globe Meter Works, Oldham.
Tel.: Main (Oldham) 3815/6.
WOLVERHAMPTON
49/51, Ablow Street. Tel.: Wolverhampton 23189.

Markets and Manufactures

Current Sales of Gas Products

The London Market

May 30.

There are no changes to report in the prices of Tar Products in the London market, which are as under:

Pitch, nominal, at about 33s. per ton f.o.b.

Creosote, about 5½d.

Refined tar, 3¾d.

Pure toluole, 2s. 1d. to 2s. 2d.

Pure benzole, about 1s. 9d.

95/160 solvent naphtha, 1s. 7d.

90/160 pyridine, 10s. to 11s.

All per gallon naked at makers' works.

The Provinces

May 30.

Crude Gas-Works Tar, 19s. to 24s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 33s. to 34s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 33s. to 34s.* Toluole, naked, North, 1s. 7½d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 7¾d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 3d. to 1s. 3½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅞d. to 5⅛d.; low gravity, 4½d. to 4⅝d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 2s. 3d. to 2s. 6d. Naphthalene, £13 10s. to £16. Salts, 80s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal; "B" quality unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *May* 28.

Business continues slack, with quotations showing weakness all round.

Crude gas-works tar.—Actual value is 37s. to 38s. per ton *ex* works in bulk.

Pitch is available in substantial quantities at round 26s. to 27s. per ton f.o.b. Glasgow for export, and about 25s. to 26s. per ton *ex* works in bulk for home trade.

Refined tar.—A regular demand exists for delivery in the home market at fixed price of 3¾d. to 4d. per gallon f.o.r. naked, but export remains rather dull at 3d. to 3¼d. per gallon in buyers' packages at makers' works.

Creosote oil.—Prices are well maintained in this district as follows: Specification oil, 5d. to 5¼d. per gallon; low gravity, 6¼d. to 6½d. per gallon; neutral oil, 5d. to 5¼d. per gallon; all *ex* works in bulk.

Cresylic acid.—Little or no interest is being shown in this product, prices of which can only be given approximately. Pale 97/99%, 2s. to 2s. 3d. per gallon; dark, 97/99%, 1s. 9d. to 2s. per gallon; and pale, 99/100%, 2s. 6d. to 2s. 8d. per gallon; all according to quality *ex* works in buyers' packages.

Crude naphtha is valued at 5½d. to 6d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha is not too active, with 90/160 grade at 1s. 4d. to 1s. 4½d. per gallon, and 90/190 heavy naphtha at 1s. 1d. to 1s. 1½d. per gallon.

Motor benzole is changing hands at 1s. 4d. to 1s. 4½d. per gallon.

Pyridine.—90/160 grade is 10s. 6d. to 11s. per gallon, and 90/140 grade is 11s. to 12s. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

		d.		s.	d.			
Crude benzole	..	0	9½	to 0	10	per gall. at works		
Motor	„ ..	1	3	„ 1	3½	„	„	„
90%	„ ..	1	4	„ 1	4½	„	„	„
Pure	„ ..	1	8	„ 1	8½	„	„	

Contracts Advertised To-Day

Coal.

Atherton Gas Department. [p. 705.]
Hoylake Urban District Council. [p. 706.]
Nantwich Gas Department. [p. 705.]
Todmorden Gas Department. [p. 705.]

Lattice Girder.

City of Plymouth Gas Department. [p. 705.]

Meters.

Blackpool Gas Department. [p. 706.]

Painting.

Warrington Gas Department. [p. 706.]

Plant Demolition.

Salford Gas Department. [p. 706.]

Barnet District Gas and Water Company

New Capital Issue

The Directors of the Barnet District Gas and Water Company invite tenders for £50,000 4½% preference stock at a minimum price of issue of £110 per £100, yielding at that price £4 1s. 10d.%. A deposit of 10% of the nominal amount tendered for must accompany a tender and the balance of the purchase money is to be paid by June 30. Purchasers will on March 1, 1939, receive a half-year's dividend for the period to Dec. 31, 1938; thereafter the dividend will be payable half-yearly on Sept. 1 and March 1. Tenders, which must be for amounts of £5 or upwards in multiples of £1, must be sent in by 10.30 a.m. on June 13, to the Company's office at 139, Cannon Street, E.C. 4.

PROTECT WITH

METROTECT

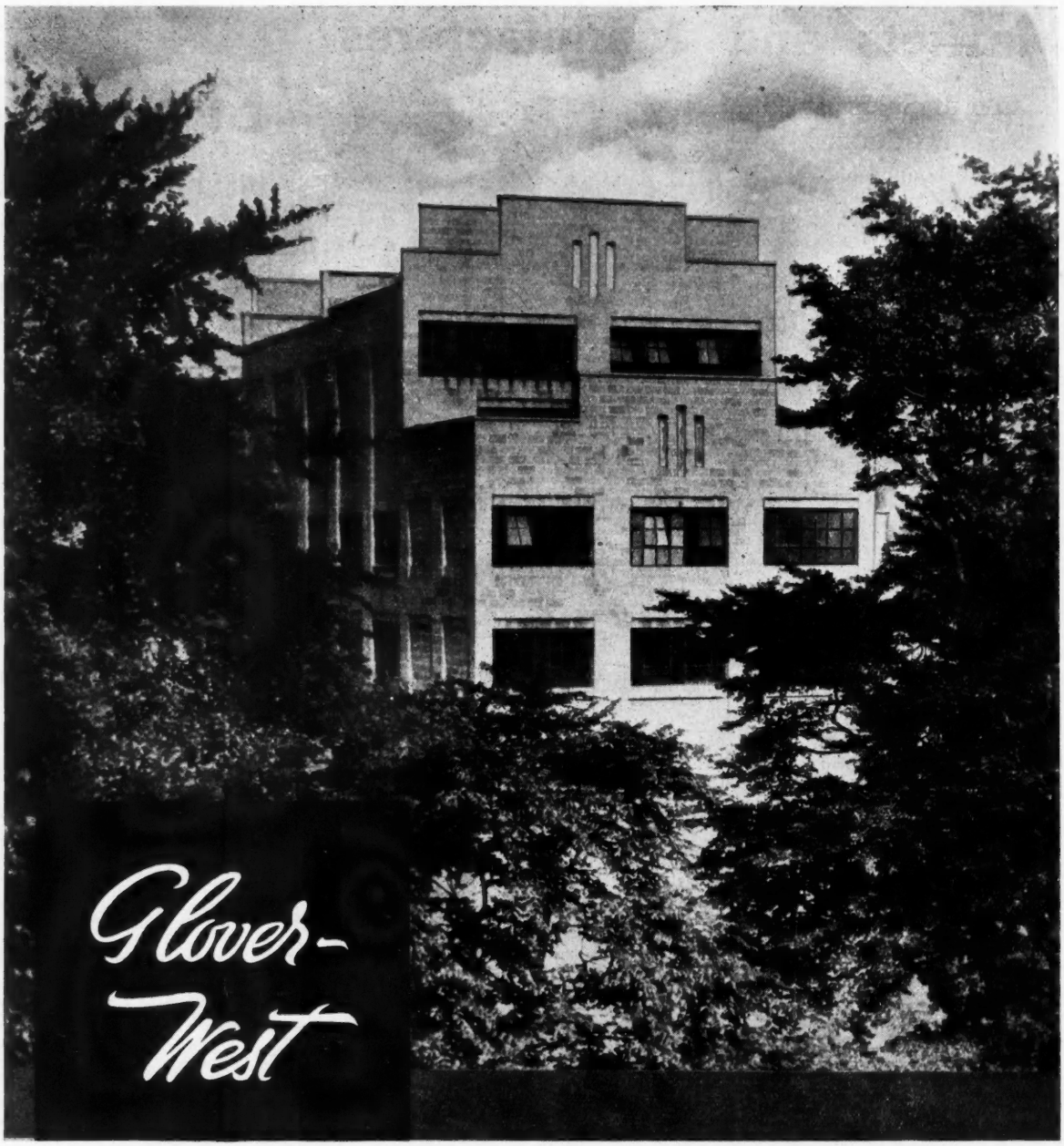
a bituminous paint producing a pleasant satin black finish with highly waterproof and anti-corrosive properties.

Protects steel-work which is continuously or periodically immersed in water. Does not become brittle on prolonged atmospheric exposure. METROTECT flows freely under the brush and can be applied quickly and without effort even in cold weather.

Prices and further particulars from—

SOUTH METROPOLITAN GAS CO.

PRODUCTS DEPARTMENT,
REGIS HOUSE,
KING WILLIAM STREET,
E.C.4.



CONTINUOUS CARBONIZATION IN VERTICAL RETORTS

The illustration shows the Glover-West vertical retort house and coke grading plant built for the Buxton Corporation Gas Department, of typical modern exterior design.

421 plants
built or in construction in
24 countries

WEST'S GAS IMPROVEMENT CO. LTD.,
MANCHESTER: Albion Ironworks, Miles Platting ■ LONDON: Columbia House, Aldwych, W.C.2

GAS STOCKS AND SHARES

Despite the easing of the tension caused by the European situation, conditions on the Stock Exchange last week were very similar to those of the previous period except that the position was further aggravated by a heavy fall in commodity prices and weakness in Wall Street, and the only feature was a continuance of speculation in gold mining shares. Although there is no widespread selling movement, genuine investors are marking time until some improvement can be seen in foreign political and financial affairs. Business in the gilt-edged market was small as supplies of stock are short, and prices closed firm. Home Rails were again weak and reacted further. Industrials remained idle and quotations moved downwards, while oils and rubbers were also neglected.

The volume of business in the Gas Market was about on a par with that of the previous week and quotations with few exceptions closed unchanged. In the Official List all movements were downwards and included another drop of 3d. to 23s. 3d. in Gas Light units, and a further fall of 2 in Imperial Continental, while Commercial and Southampton ordinaries both reacted a point. Two additions have been made to the List this week—viz., £75,000 Portsmouth 4% preference quoted at 95-100, and £114,000 Preston 5% preference at 106-109 which appears rather undervalued. There were more movements than usual at the Provincial Exchanges, and it will be seen that with the exception of a drop of a point in Bristol ordinary all were in an upward direction. In the Supplementary List, the only change occurred in Bognor 7% maximum stock, several parcels of which changed hands at 163¾-164¼, and the nominal quotation was moved up 5¼ points to 155-165.

At the time of writing there is a good supply of gas ordinary stocks on offer. Preference stocks available are somewhat more limited, but among those for disposal are the following:

Amount Offered.	——	Price.	Yield, %.
£			£ s. d.
20,000	Associated Gas and Water 4% Cum. Red. £1	20/- free	4 0 0
5,000	Commercial 4% Red.	101½	3 18 9
200	Croydon 4% Perp.	98	4 1 6
500	Gas Consolidation 4% Cum. Red. £1 ..	19/9	4 1 0
10,000	Severn Valley 4½% Cum. £1	21/- free	4 5 9
200	South Suburban 4% Pref.	99	4 0 8
1,000	United Kingdom Gas 4½% 1st Cum. £1 ..	20/9	4 6 3
2,000	United Kingdom Gas 4% Red. £1	20/0	4 0 0

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 27.	Rise or Fall on Week.
1,767,439	Mar. 7	8	8	Alliance & Dublin Ord. ...	140—150	...
374,000	Dec. 13	4	4	Do. 4 p.c. Deb. ...	95—100	...
558,190	May 9	5	5	Ascd. Gas & Water U'd'ts Ord.	17/6—19/6	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
216,041	,,	§-/4	4	Do. 4 p.c. Red. Cum. Pref.	19/—20/—	...
278,590	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	17/—19/—	...
500,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
558,890	Feb. 21	7	7	Barnet Ord. 7 p.c.	158—163	...
300,000	Apl. 4	1/4½	1/9¾	Bombay, Ltd.	24/6—26/	...
179,915	Feb. 21	9½	9½	Bournemouth sliding scale ...	195—205	...
590,407	,,	7	7	Do. 7 p.c. max. ...	157—162	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	132—137	...
50,000	Dec. 13	3	3	Do. 3 p.c. Deb. ...	78—83	...
262,025	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...
357,900	Feb. 21	7½	7½	Brighton, &c., 6 p.c. Con. ...	145—150	...
649,955	,,	6½	6½	Do. 5 p.c. Con. ...	128—133	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	125—130	...
855,000	Mar. 7	7	8	British Ord.	138—143	...
100,000	Dec. 13	7	7	Do. 7 p.c. Pref.	142—147	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1¼—2½	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1¼—3½	...
150,000	Dec. 13	4½	4½	Do. 4½ p.c. Deb. ...	65—75	...
626,860	Feb. 7	6	6	Cardiff Con. Ord.	120—125	...
237,860	Dec. 13	5	5	Do. 5 p.c. Red. Deb.	106—111	...
98,936	Mar. 21	2/-	2/-	Colombo Ord....	1¾—1¾	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref.	23/—25/—	...
739,453	Mar. 21	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	16/6—18/6	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref.	23/—25/—	...
1,775,005	Feb. 7	5	5	Commercial Ord.	82—87	—1
620,000	Nov. 29	3	3	Do. 3 p.c. Deb. ...	73—78	...
286,344	Feb. 7	5	5	Do. 5 p.c. Deb. ...	113—118	...
807,560	Feb. 21	7	7	Croydon sliding scale... ...	137—142	...
644,590	,,	5	5	Do max. div.	107—112	...
620,385	Dec. 13	5	5	Do. 5 p.c. Deb.	115—120	...
239,000	Feb. 7	5	5	East Hull Ord. 5 p.c.... ...	96—101	...
185,355	Feb. 21	6	6	East Surrey Ord. 5 p.c. ...	118—123	...
176,211	Dec. 13	5	5	Do. 5 p.c. Deb. ...	115—120	...
250,000	Nov. 15	7	4	Gas Consolidation Ord. ...	19/—21/—	...
250,000	May 9	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6	...
19,223,324	Feb. 7	5¾	5¾	Gas Light & Coke Ord. ...	22/9—23/9a	—/3
2,600,800	,,	3½	3½	Do. 3½ p.c. max. ...	78—81	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref.	99—102	...
2,993,000	Jan. 17	...	3½	Do. 3½ p.c. Red. Pref.	100½—102½	...
8,602,497	May 23	3	3	Do. 3 p.c. Con. Deb.	77—80*	—1
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb.	110—113*	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb.	109—112*	—1
700,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb.	97—100	...
270,466	Feb. 21	6	6	Harrogate New Cons. ...	118—123	...
157,500	Mar. 21	1/2§	1/‡	Hong Kong and China Ord	¾—1	...
213,200	Feb. 7	6	6	Hornsey Con. 3½ p.c. ...	100—110	...
5,600,000	May 9	8	‡2	Imperial Continental Cap. ...	123—128	—2
223,130	Jan. 17	3½	3½	Do. 3½ p.c. Red. Deb. ...	88—93	...
285,242	Feb. 21	8½	8½	Lea Bridge 5 p.c. Ord. ...	167—172	...
11,751	Feb. 21	8	10	Maidstone 5 p.c. Cap.... ...	175—185	...
63,480	Dec. 13	3	3	Do. 3 p.c. Deb. ...	70—75	...
75,000	May 23	†10	†10	Malta & Mediterranean ...	137—142*	—5
				Metropolitan (of Melbourne)		...
392,000	Apl. 1	5½	5½	5½ p.c. Red. Deb.	99—102	...
231,977	Feb. 21	5	5	M.S. Utility 'C' Cons. ...	99—104	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...
360,075	Dec. 13	4	4	M.S. Utility 4 p.c. Deb. ...	97—102	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	113—118	...
675,000	May 9	†6	†6	Montevideo, Ltd.	70—75*	...
250,000	Mar. 7	7½	7½	North Middlesex 6 p.c. Con.	145—150	...
396,160	Feb. 7	5	5	Northampton 5 p.c. max. ...	107—112	...
300,000	Apl. 25	†9	†7	Oriental, Ltd.	150—155	...
468,537	Dec. 13	8	8	Plymouth & Stonehouse 5 p.c.	154—159	...
621,667	Feb. 7	8½	8½	Portsmouth & Gosport Cons.	160—165	...
241,446	,,	5	5	Do. 5 p.c. max. ...	102—107	...
73,350	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
75,000	Feb. 7	...	4	Do. 4 p.c. Pref. ...	95—100	...
114,000	Feb. 7	5	5	Preston 5 p.c. Pref.	106—109	...
247,966	Dec. 13	4	4	Primitiva 4 p.c. Cons. Deb. ...	98—103	...
625,959	Jan. 17	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
15,000	Mar. 21	6	6	San Paulo 6 p.c. Cum. Pref. ...	8¾—9¼	...
441,275	Apl. 25	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	20/6—22/6	...
460,810	Mar. 21	-/10⅞	-/10⅞	Do. 4½ p.c. Red. Cum. Pref.	19/6—21/6	...
133,201	Feb. 7	8½	5	Shrewsbury 5 p.c. Ord. ...	128—133	...
9,000	June 7	4	4	South African Ord.	3¾—4¼	...
1,371,752	Apl. 25	1/2⅞	1/2⅞	South East'n Gas Cn. Ld. Ord.	21/6—23/6	...
871,636	Mar. 7	-/10⅞	-/10⅞	Do. 4½ p.c. Red. Cum. Pref.	20/6—22/6	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/—	...
450,000	Feb. 7	4	4	Do. 4 p.c. Deb.	100—103	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—98	...
6,709,895	Feb. 7	6	5	South Met. Ord.	104—107	...
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pf. ...	130—135	...
850,000	,,	4	4	Do. 4 p.c.Irred. Pf. ...	97—100	...
1,895,445	Dec. 13	3	3	Do. 3 p.c. Deb. ...	78½—81½	...
1,000,000	Jan. 17	5	5	Do. 5 p.c. Red. Deb....	109—112	...
1,543,795	Feb. 7	6	6	South Suburban Ord. 5 p.c....	118—123	...
512,825	,,	5	5	Do. 5 p.c. Pref....	110—115	...
500,000	,,	4	4	Do. 4 p.c. Pref....	95—100	...
250,000	,,	§18/9	3½	Do. 3½ p.c. Red. Pref.	98—101	...
888,587	Dec. 13	5	5	Do. 5 p.c. Deb....	115—120	...
250,000	,,	4	4	Do. 4 p.c. Deb....	97—100	...
200,000	Sept. 20	...	3½	Do. 3½ p.c. Red. Deb.	94—99	...
427,859	Apl. 25	1/2⅞	9¾	S. Western Gas & Water Ord.	16/6—18/6	...
160,523	,,	-/10⅞	-/10⅞	Do. 4½ p.c. Red. Cum. Pf.	19/—21/—	...
110,000	Dec. 13	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...
750,54†	Feb. 7	5	5½	Southampton Ord. 5 p.c.	108—113	—1
148,836	Dec. 13	4	4	Do. 4 p.c. Deb.	96—101	...
350,000	Feb. 7	5½	5½	Swansea 5½ p.c. Red. Pref. ...	108—113	...
94,000	Jan. 3	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
1,076,490	Feb. 7	6¾	6¾	Tottenham and District Ord.	126—131	...
409,835	,,	5½	5½	Do. 5½ p.c. Pref....	119—124	...
62,235	,,	5	5	Do. 5 p.c. Pref....	108—113	...
371,850	Dec. 13	4	4	Do. 4 p.c. Deb....	97—102	...
85,701	Apl. 25	6	6	Tuscan 6 p.c. Red. Deb. ...	95—100	...
888,629	Apl. 4	4	6	U. Kingdom Gas Cor. Ord....	18/6—20/6	...
937,743	May 9	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	19/6—21/6	...
500,000	,,	-/1·15	4	Do. 4 p.c. 1st Red. Cum. Pf.	19/—21/—	...
745,263	Dec. 13	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	16/6—18/6	...
1,000,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...
373,939	Feb. 7	7	7	Uxbridge, &c., 5 p.c.	133—138	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
1,371,138	Feb. 7	7	7	Wandsworth Consolidated ...	137—142	...
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	98—101	...
1,343,964	Dec. 13	5	5	Do. 5 p.c. Deb. ...	116—121	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
558,342	Feb. 7	7	7	Watford and St. Albans Ord.	135—140	...
200,000	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...
200,000	,,	5½	5½	Do. 5½ p.c. Pref. ...	120—125	...
200,000	Nov. 29	4	4	Do. 4 p.c. Red. Deb.	97—102	...
100,000	,,	3½	3½	Do. 3½ p.c. Red. Deb.	95—100	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 27.	Rise or Fall on Week.
202,152	Mar. 21	5	5	Ascot Ord.	103—108	...
128,182	Dec. 13	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Mar. 21	...	-/4½	Associated Utilities 4 p.c. Pref.	16/—18/-	...
100,000	Dec. 13	...	3½	Do. 3½ p.c. Red. Deb....	95—100	...
17,000	Feb. 21	8	8	Bognor Orig. Ord. 'A' ...	155—165	...
62,210	,,	8	8	Do. New Addl. 'A' ...	155—165	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	155—165	+5½
37,440	Feb. 7	10	10	Cam. Univ. & Town10 p.c. max.	190—200	...
125,970	,,	7	7	Do. 7 p.c. max.	135—140	...
39,025	,,	5	5	Do. 5 p.c. max.	97—102	...
96,410	Feb. 7	4½	4½	Cardiff 4½ p.c. Pref.	95—100	...
150,000	Feb. 21	4	4	Croydon 4 p.c. Pref.	95—100	...
130,000	Dec. 13	4	4	Do. 4 p.c. Deb.	97—102	...
65,000	Mar. 7	7½	8½	Eastbourne 'A' 5 p.c.	155—160	...
198,000	,,	6	7	Do. 'B' 3½ p.c.	125—130	...
112,312	,,	5	5	Do. 5 p.c. Pref.	107—112	...
130,000	Dec. 13	5	5	Do. 5 p.c. Deb.	113—118	...
24,000	Feb. 21	8½	8½	Great Yarmouth 8½ p.c. max.	43—48	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	33—38	...
51,160	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	125—130	...
152,600	Feb. 21	8	9	Guildford Cons.	167—172	...
54,055	,,	5	5	Do. 5 p.c. Pref.	108—113	...
68,250	Dec. 13	5	5	Do. 5 p.c. Deb.	112—117	...
156,600	Feb. 21	7½	7½	Hampton Court Cons. ...	140—150	...
80,000	Feb. 21	4	4	Lea Bridge 4 p.c. Pref ...	94—99	...
60,000	,,	6	6	Do. 6 p.c. Pref. ...	123—128	...
94,876	Dec. 13	4	4	Do. 4 p.c. Deb. ...	97—100	...
73,620	Mar. 7	8½	8½	Luton Cons. 'A'	160—165	...
107,960	Mar. 21	4	5½	Mid Kent Ord.	8½—9½	...
230,940	Feb. 7	10	10	Oxford & District Ord. ...	196—203	...
47,112	,,	5	5	Do. 5 p.c. Pref.	106—111	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	108—113	...
126,193	May 9	7½	7½	Peterborough Ord.	135—145	...
64,990	Mar. 7	6½	7½	Redditch Ord....	120—130	...
166,850	Feb. 7	8	8	Romford Ord....	148—153	...
60,000	,,	4	4	Do. 4 p.c. Pref.	97—100	...
44,000	Mar. 21	5	5	Do. 5 p.c. Deb.	111—116	...
25,570	Feb. 7	5½	5½	Rugby 5½ p.c. Pref.	123—128	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref ...	105—110	...
42,750	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	120—125	...
110,950	Feb. 21	8	8	Ryde Ord.	140—150	...
270,086	Mar. 21	7	7	Slough Ord.	128—133	...
21,000	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	May 9	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/-	...
28,866	Mar. 7	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...
137,730	Feb. 21	7	7	Southgate & Dist. 7 p.c. max.	135—140	...
62,500	,,	5	5	Do. 5 p.c. Pref.	110—115	...
117,228	Feb. 7	5	7	Swindon Cons.	104—109	...
60,425	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
64,380	Dec. 13	5	5	Torquay and Paignton 5 p.c. Pf.	108—113	...
33,858	May 9	-/2·70b	4½	United Kingdom Gas Corpn. 4½ p.c. 1st Cum. Pref. ...	18/—20/-	...
130,000	Feb. 7	5	8	Wakefield Ord.	118—123	...
81,650	,,	5	5	Do. 5 p.c. max.	101—106	...
82,000	Feb. 21	6	6	Weymouth Ord.	105—110	...
98,384	Feb. 7	6	6	Wolverhampton 6 p.c. Pref....	118—123	...
160,000	Dec. 13	5½	5½	Do. 5½ p.c. Rd. Db.	107—112	...
90,000	Dec. 13	5	5	York 5 p.c. Red. Deb.... ...	104—109	...
133,640	Feb. 21	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	120—125	...
120,000	,,	5	5	Do. 5 p.c. Pref.	106—111	...
35,000	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	121—126	...

BRISTOL EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, May 27.	Rise or Fall on Week.
347,756	Feb. 7	5	6	Bath Cons.	120—122	...
1,667,250	Feb. 7	5	5	Bristol, 5 p.c. max.	114—116	−1
120,420	Dec. 13	4	4	Do. 1st 4 p.c. Deb. ...	100—102	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100—102	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	Feb. 21	5	5	Newport (Mon.) 5 p.c. max....	99—101	...
13,200	Mar. 21	7	8⅜	Pontyp'l Gas & W. 10 p.c. 'A'	12½—13½	...
13,600	,,	5	6	Do. 7 p.c. 'B'	12—12½	+½
40,000	,,	5	6	Do. 7 p.c. 'C'	12—12½	+½
140,778	Feb. 7	5	5	Weston-super-Mare Cons. ...	110—112	...
64,338	Jan. 3	4	4	Do. 4 p.c. Deb.	94½—96½	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	154—157	...

LIVERPOOL EXCHANGE

157,150	Feb. 7	5	6½	Chester 5 p.c. Ord.	107—110	...
92,500	Dec. 13	4	4	Do. 4 p.c. Pref.	96—100	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	88—91	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	98—102	+1
2,167,410	Feb. 21	6	6	Liverpool 5 p.c. Ord.... ...	124⅝—125½	...
245,500	Dec. 13	5	5	Do. 5 p.c. Red. Pref. ...	99—104	...
306,083	Jan. 17	4	4	Do. 4 p.c. Deb. ...	100—102	...
106,280	Feb. 7	10	10	Preston 'A' 10 p.c.	202—212	...
188,219	,,	7	7	Do. 'B' 7 p.c.	144—154	...

NEWCASTLE EXCHANGE

122,577	Feb. 21	8	8	Blyth 5 p.c. Ord.	163½—164½	...
732,000	Feb. 21	5	5	Hartlepool G. & W. Cn. & New	110—112	...
2,061,315	Feb. 7	5	5⅝	Newcastle & Gateshead Con.	22/9—23/3a	...
682,856	,,	4	4	Do. 4 p.c. Pref. ...	99½—100⅝	+⅛
776,706	Jan. 3	3½	3½	Do. 3½ p.c. Deb. ...	90—91	...
277,285	May 9	5	5	Do. 5 p.c. Deb. '43...	103—105	...
332,351	Feb. 7	6	6	Sunderland 6 p.c. max. ...	137—139	...

NOTTINGHAM EXCHANGE

542,270	Feb. 21	6	9	Derby Con.	135—140	...
55,000	Dec. 13	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	Dec. 13	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

10,000	Feb. 21	10	10	Great Grimsby 'A' Ord. ...	205—215	...
6,500	,,	10	10	Do. 'B' Ord. ...	205—215	...
79,000	,,	10	10	Do. 'C' Ord. ...	195—205	...
1,806,339	Feb. 21	6½	6½	Sheffield Cons.	140—143	+1
95,000	Jan. 3	4	4	Do. 4 p.c. Deb.	102—104	...

a The quotation is per £1 of Stock. b Actual. * Ex div.

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